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8

9 UNITED STATES DISTRICT COURT
10 NORTHERN DISTRICT OF CALIFORNIA
11 SAN FRANCISCO DIVISION
12

13 RICOH COMPANY, LTD.,)

14 Plaintiff,)

15 vs.)

16 AEROFLEX INCORPORATED, et al.,)

17 Defendants.)

18 SYNOPSYS, INC.,)

19 Plaintiff,)

20 vs.)

21 RICOH COMPANY, LTD., a Japanese)
corporation)

22 Defendant.)
23
24
25
26
27
28

Case No. C03-04669 MJJ (EMC)

Case No. C03-2289 MJJ (EMC)

**RESPONSIVE CLAIM CONSTRUCTION
BRIEF FOR U. S. PATENT NO. 4,922,432**

Date: October 29, 2004

Time: 9:30 AM

Courtroom: 11

Judge: Martin J. Jenkins

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1 **I. INTRODUCTION**

2 Long-standing precedent from the Court of Appeals for the Federal Circuit prohibits patent
3 owners, like Ricoh, from proffering interpretations for the purposes of litigation that would alter the
4 indisputable public record and treat the claims as a “nose of wax.” This is precisely what Ricoh seeks
5 to accomplish here. Ricoh proffers interpretations for the disputed claim terms that contradict the
6 clear import of the ‘432 patent, its file history, and the prior art that was distinguished from the
7 invention in that file history.

8 For example, the public record for the ‘432 patent clearly and unmistakably limits the claimed
9 invention by requiring that: (1) the input specifications be in a simple flowchart format; (2) the input
10 specifications exclude what are known as register-transfer level descriptions; and (3) a rule-based
11 expert system software be used as opposed to conventional software programs to select the hardware
12 cells for the design of the desired ASIC. Because Ricoh knows that the use of the Synopsys Design
13 Compiler® products at issue in the captioned actions are not capable of meeting any of these three
14 requirements, Ricoh proposes constructions for the disputed claim terms that are contrary to the ‘432
15 patent’s public record.

16 In fact, litigation induced interpretations that run contrary to the understanding of a person of
17 ordinary skill in the art pervade Ricoh’s entire opening claim construction brief. For this reason, the
18 court should adopt Synopsys’ and Defendants’ proposed constructions, which are consistent with
19 how a person of skill in the art would understand the ‘432 patent’s claims, specification, and its file
20 history.

21 **II. LEGAL PRINCIPLES GOVERNING CLAIM CONSTRUCTION**

22 The proper construction of disputed terms in a patent claim—*i.e.*, claim construction—is an
23 issue of law reserved exclusively for the Court. *Markman v. Westview Instruments, Inc.*, 517 U.S.
24 370, 372 (1996). Claim construction is the judicial determination of what is and what is not covered
25 by the disputed terms in the patent claims. *Netword, LLC v. Centraal Corp.*, 242 F.3d 1347, 1352
26 (Fed. Cir. 2001) (citing *United States Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir.
27 1997)). Claim construction issues are legal issues for the Court to decide, and therefore, neither party
28 bears the burden of proof on those legal issues.

1 Recently, the Court of Appeals for the Federal Circuit, in *Phillips v. AWH Corp.*, 376 F.3d
 2 1382 (Fed. Cir. 2004) issued an order granting a petition to rehear that appeal, *en banc*, to address
 3 and resolve issues concerning claim construction. . Specifically, that order demonstrates that the
 4 Federal Circuit will be addressing, *en banc*, issues regarding claim construction methodologies and
 5 the appropriate role and use of intrinsic evidence and extrinsic evidence such as expert testimony and
 6 technical dictionaries to interpret disputed claim terms. *Id.* at 1383-84. Despite the existing
 7 uncertainty in the Federal Circuit’s decisions regarding the appropriate “methodology” for
 8 interpreting disputed claim terms, as recognized by the Federal Circuit’s order in *Philips*, Synopsys
 9 and Defendants believe that the following five basic long-standing legal principles, explained below,
 10 should guide this court’s construction of the disputed claim terms in the present action:

- 11 A. disputed claim terms are generally given their ordinary meaning to one of ordinary skill in the art;
- 12 B. intrinsic evidence is the most significant source for determining the ordinary meaning of disputed
 claims terms;
- 13 C. extrinsic evidence may be relied on to ascertain the ordinary meaning of disputed claims terms;
- 14 D. only intrinsic evidence may be used to establish a meaning for a disputed claim term other than its
 ordinary meaning to one of skill in the art; and,
- 15 E. extrinsic evidence may never be used to alter a claim term’s ordinary meaning or any other
 meaning established in the intrinsic evidence.

16 **A. Disputed Claim Terms Are Generally Given Their Ordinary Meaning To One Of**
 17 **Ordinary Skill In The Art**

18
 19 When construing disputed claim terms, “the court must apply the same understanding as that
 20 of persons knowledgeable in the field of the invention.” *Merck & Co v. Teva Pharms. USA, Inc.*, 347
 21 F.3d 1367, 1371 (Fed. Cir. 2003) “[P]atents are written not for laymen, but for and by persons
 22 experienced in the field of the invention.” 347 F.3d at 1371 (citation omitted); *See also, Multiform*
 23 *Desiccants, Inc., v. Medzam, Ltd.*, 133 F.3d 1473, 1477 (Fed. Cir. 1998) (claim terms “must be
 24 understood and interpreted by the court as they would be understood and interpreted by a person in
 25 that field of technology”). “Accordingly, a technical term used in a patent is interpreted as having the
 26 meaning a person of ordinary skill in the field of the invention would understand it to mean.” *Bell*
 27 *Atl. Network Servs. v. Covad Communications Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001).
 28 Generally, the court gives the disputed “claim terms their ordinary and accustomed meaning as

1 understood by one of ordinary skill in the art.” *Id.*¹

2 “The ordinary and customary meaning of a claim term to one of ordinary skill in the art may
3 be ascertained from a variety of sources . . .” *W.E. Hall Co. v. Atlanta Corrugating, LLC*, 370 F.3d
4 1343, 1350 (Fed. Cir. 2004). Such sources include: 1) the intrinsic evidence, *i.e.*, the patent’s claims,
5 specification, and its file history, including any prior art cited in the patent or file history; and, 2)
6 extrinsic evidence, such as expert testimony, technical dictionaries, treatises, and textbooks, and prior
7 art not cited in the patent or its file history. *See id*; *Merck & Co.*, 347 F.3d at 1372; *Kumar v. Ovonic*
8 *Battery Co.* 351 F.3d 1364, 1368 (Fed. Cir. 2003). While extrinsic evidence may be useful to shed
9 light on the relevant art and therefore assist the court in placing itself in the shoes of one of ordinary
10 skill in the art, it is the intrinsic evidence that constitutes the public record of the patentee’s claim, a
11 record on which reasonable competitors are entitled to rely, and, therefore, it is this intrinsic evidence
12 that is the “most significant source” for determining the ordinary meaning of disputed claim terms.
13 *See Vanderlande Indus. Nederland BV v. ITC*, 366 F.3d 1311, 1318 (Fed. Cir. 2004) (citing *Vitronics*
14 *Corp. v. Conceptiontronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

15 **B. Intrinsic Evidence Is The Most Significant Source For Determining The**
16 **Ordinary Meaning Of Disputed Claims Terms**

17 “It is well-settled that, in interpreting an asserted claim, the court should look first to the
18 intrinsic evidence of record, *i.e.*, the patent itself, including the claims, the specification and, if in
19 evidence, the prosecution history . . . Such intrinsic evidence is the most significant source of the
20 legally operative meaning of disputed claim language.” *Bell Atl. Network Servs.*, 262 F.3d at 1267
21 (quoting, *Vitronics Corp. Conceptiontronic, Inc.*, 90 F.3d at 1582).

22
23
24 ¹ There are decisions from the Court of Appeals for the Federal Circuit that refer to a “presumption”
25 or “heavy presumption” of ordinary meaning for disputed claim terms—an issue of law. Since its
26 adoption in 1975, however, Rule 301 of the Fed. R. Evid. has provided that presumptions in civil
27 actions “vanish[] upon the introduction of evidence sufficient to support a finding of the nonexistence
28 of the presumed **fact**.” *A.C. Aukerman Co. v. R.L. Chaides Constr. Co.*, 960 F.2d 1020, 1037 (Fed.
Cir. 1992) (en banc) (emphasis added). Given that presumptions relate to “factual” and not “legal”
issues such as the meaning of the disputed claim terms in a patent, these cases merely stand for the
proposition that claim terms should generally be given their ordinary meaning to a person of skill in
the art unless the intrinsic evidence clearly supports (explicitly or implicitly) a different meaning.

1 First, the claim construction analysis always begins with the words of the claims, which are
2 examined through the viewing glass of a person of skill in the art. *Interactive Gift Express, Inc. v.*
3 *Compuserve, Inc.*, 256 F.3d 1323, 1331-32 (Fed. Cir. 2001); *See Vitronics*, 90 F.3d at 1582. While
4 the focus may be on the particular claim terms or phrases in dispute, the “context of the surrounding
5 words in a claim also must be considered in determining the ordinary and customary meaning of a
6 disputed claim limitation.” *Arlington Indus., Inc. v. Bridgeport Fittings, Inc.*, 345 F.3d 1318, 1325
7 (Fed. Cir. 2003). In fact, the words in both the asserted and nonasserted claims must be considered in
8 defining the scope of the claimed invention. *Vitronics*, 90 F.3d at 1582. Most importantly, in
9 construing the disputed claim terms, “the analytical focus must begin and remain centered on the
10 language of the claims themselves, for it is that language that the patentee chose to use to
11 ‘particularly point[] out and distinctly claim[] the subject matter which the patentee regards as his
12 invention.’” *Interactive Gift Express*, 256 F.3d at 1331 (quoting 35 U.S.C. § 112, ¶ 2).

13 Second, “[c]laims are not interpreted in a vacuum, but are part of and are read in light of the
14 specification.” *Microsoft Corp. v. Multi-Tech Sys., Inc.*, 357 F.3d 1340, 1347 (Fed. Cir. 2004)
15 (citation omitted). “A fundamental rule of claim construction is that terms in a patent document are
16 construed with the meaning with which they are presented in the patent document.” *Merck & Co.*,
17 347 F.3d at 1371 (“[C]laims must be construed so as to be consistent with the specification, of which
18 they are a part.”). “Thus, the specification is always highly relevant to the claim construction
19 analysis.” *Vitronics*, 90 F.3d at 1582. “Usually, it is dispositive; it is the single best guide to the
20 meaning of a disputed term.” *Id.* In short, the patent’s description in the specification is always
21 relevant to determining the ordinary and customary meaning of the disputed claim terms and
22 therefore, must be examined for that purpose in every case.

23 Third, although “[t]he best source for understanding a technical term is the specification from
24 which it arose,” that understanding should be “informed, as needed, by the prosecution history.”
25 *Multiform Desiccants*, 133 F.3d at 1478. The prosecution history “reveals how those closest to the
26 patenting process – the inventor and the patent examiner – viewed the subject matter.” *Id.* Thus, the
27 patent’s file history is certainly a significant source for ascertaining the ordinary meaning of claim
28 terms that must be reviewed in every case. *Jansen v. Rexall Sundown, Inc.*, 342 F.3d 1329, 1333

1 (Fed. Cir. 2003) (“The prosecution history is often useful to ascertain the meaning of the claim
2 language.”).

3 Besides the patent’s claims, specification and its file history, the prior art cited in the patent
4 and its file history also constitutes intrinsic evidence that provides valuable guidance that may be
5 dispositive on the ordinary meaning of a claim term to one of skill in the art. *Kumar*, 351 F.3d at
6 1368. “[W]hen prior art that sheds light on the meaning of a term is cited by the patentee, it can
7 have particular value as a guide to the proper construction of the term, because it may indicate not
8 only the meaning of the term to persons skilled in the art, but also that the patentee intended to adopt
9 that meaning.” *Kumar*, 351 F.3d at 1368 (quoting *Arthur A. Collins, Inc. v. N. Telecom, Ltd.*, 216
10 F.3d 1042, 1045 (Fed. Cir. 2000)). Thus, like the patent’s claims, specification, and its file history,
11 the prior art cited in the patent or its file history is part of the intrinsic evidence and therefore, must
12 also be examined for determining the ordinary meaning of claim terms in every case. *See Kumar*,
13 351 F. 3d 1368.

14 C. Extrinsic Evidence May Be Relied On To Ascertain The Ordinary Meaning Of 15 Disputed Claims Terms

16 Extrinsic evidence may never be “used to vary, contradict, expand, or limit the claim language
17 from how it is defined, even by implication, in the specification or file history.” *Novartis Pharms.*
18 *Corp. v. Abbott Labs.*, 375 F. 3d 1328, 1335 (Fed. Cir. 2004); *See Vitronics*, 90 F.3d at 1584
19 (“extrinsic evidence . . . may not be used to vary or contradict the claim language”). Instead,
20 extrinsic evidence may be examined by the court to help understand the disputed claim term, shed
21 light on the relevant field of the invention, and ensure that the court’s construction of the disputed
22 claim terms are consistent with the “clearly expressed, plainly apposite, and widely held
23 understandings in the pertinent technical field.” *AFG Indus., Inc. v. Cardinal IG Co., Ltd.*, 239 F.3d
24 1239, 1249 (Fed. Cir. 2001) (citations omitted); *See also, Vitronics*, 90 F.3d at 1584 (“extrinsic
25 evidence...may be used only to help the court come to the proper understanding of the claims . . .”).
26 Thus, extrinsic evidence may be used to assist the court in ascertaining the ordinary meaning of the
27 disputed claim terms. *Bell Atl. Network*, 262 F.3d at 1268-69.

1 1. **Prior Art, Technical Dictionaries And Treatises Are The Preferred**
2 **Sources Of Extrinsic Evidence**

3 Because prior art and technical dictionaries “are more objective and reliable guides” and such
4 “sources are accessible to the public in advance of litigation”, they are the extrinsic evidence sources
5 that are preferred over expert opinion testimony. *Vitronics*, 90 F.3d at 1585. Specifically, “prior art
6 can often help to demonstrate how a disputed term is used by those skilled in the art” and “may also
7 be more indicative of what all those skilled in the art generally believe a certain term means.” *Id.* at
8 1584. Similarly, the court may use technical dictionaries and treatises “to better understand the
9 technology” and “when construing claim terms,” as long as those definitions do not “contradict any
10 definition found in or ascertained by a reading of the” intrinsic evidence. *Id.* at 1584 n.6. Thus, the
11 court may certainly rely on both prior art not cited in the intrinsic evidence and technical dictionaries
12 to ascertain the ordinary meaning of disputed claim terms. *Id.* at 1584-85.

13 2. **Non-Scientific Or General-Usage Dictionaries Are Irrelevant To The**
14 **Meaning Of Terms Of Art And Ordinary Words Used In A Technological**
15 **Context**

16 Unlike appropriate technical dictionaries and treatises reflecting the understandings of persons
17 of skill in the field of the invention, however, except for limited circumstances, non-scientific or
18 general-usage dictionaries are irrelevant to the meaning of both ordinary words “in a technological
19 context” and technical terms of art in the field of the invention. *AFG Indus.*, 239 F.3d at 1248.
20 “Only when the context is unclear, or it appears that the term is not being used in a technical manner,
21 should the trial court rely upon a general purpose dictionary for construing the term.” *Id.* “But where
22 evidence – such as expert testimony...or technical dictionaries – demonstrates that artisans would
23 attach a special meaning to a claim term, or...would attach no meaning at all to that claim term
24 (independent of the specification), general-usage dictionaries are rendered irrelevant with respect to
25 that term; a general-usage dictionary cannot overcome credible art-specific evidence of the meaning
26 or lack of meaning of a claim term.” *Vanderlande*, 366 F.3d at 1321. For these reasons, the Federal
27 Circuit has repeatedly “cautioned against the use of non-scientific dictionaries, ‘lest dictionary
28

1 definitions . . . be converted into technical terms of art having legal, not linguistic significance.” *See*
 2 *e.g., id.* (citations omitted).

3 **3. Expert Testimony Should Be Used To Inform The Court’s Construction**
 4 **And A Failure To Take Into Account Such Testimony May Constitute**
 5 **Reversible Error**

6 Although prior art (not cited in the intrinsic evidence) and technical dictionaries and treatises
 7 are the preferred sources of extrinsic evidence, expert testimony may also be used “to help the court
 8 come to the proper understanding of the claims.” *Vitronics*, 90 F.3d at 1584. In fact, because a term
 9 of art must be construed in a manner consistent with the scientific and technical context in which it is
 10 used in the patent, in some instances “‘the testimony of scientific witnesses is indispensable to a
 11 correct understanding’ of the meaning of disputed claim terms, and . . . ‘it would undoubtedly be error
 12 for the court to reject the testimony.’” *AFG Indus., Inc.*, 239 F.3d at 1249 (quoting *Seymour v.*
 13 *Osbourne*, 78 U.S. 516, 546 (1871)). Expert testimony “can and should be used to inform the
 14 court’s” construction of disputed claim terms and a “failure to take into account the testimony of
 15 persons of ordinary skill in the art may constitute reversible error.” *Id.* In short, where the claims
 16 contain technical terms or terms of art it is not only appropriate but preferable that the court consult
 17 trustworthy expert testimony to aid the court in coming to the correct conclusion on the proper
 18 meaning of disputed terms of art in the claims. *See id.*

19 **D. Only Intrinsic Evidence May Be Used To Establish A Meaning For A Disputed**
 20 **Claim Term Other Than Its Ordinary Meaning To One Of Skill In The Art**

21 Generally, the court gives the disputed “claim terms their ordinary and accustomed meaning
 22 as understood by one of ordinary skill in the art.” *Bell Atl. Network*, 262 F.3d at 1267; *Vitronics*, 90
 23 F.3d at 1582. The circumstances where a claim term may be construed to have a meaning other than
 24 its ordinary meaning to one of skill in the field of the invention include where the intrinsic evidence:
 25 1) plainly defines the claim term either explicitly or by implication; 2) shows that the patentee
 26 distinguished the invention from a prior art reference, expressly disclaims subject matter from the
 27 scope of the invention, or highlights a particular feature as important to the invention; 3) provides
 28 meaning to a claim term that would otherwise render the scope of the claim unclear. *See e.g., W.E.*

1 *Hall Co.*, 370 F.3d at 1353. The circumstances where a court’s construction may depart from the
 2 ordinary meaning of a disputed claim term are best understood through examples of actual decisions.

3 1. **The Intrinsic Evidence May Implicitly Define A Claim Term With Or**
 4 **Without An Explicit Statement Of Redefinition**

5 First, a claim term may be redefined by the intrinsic evidence with or without an explicit
 6 statement of redefinition. *Bell Atl. Network*, 262 F.3d at 1268; *see, Vitronics*, 90 F.3d at 1584 n.6
 7 (meaning of claim terms may be “‘found in or ascertained by a reading of the patent documents’”).
 8 In *Bell Atl. Network*, the Federal Circuit affirmed the district court’s grant of summary judgment of
 9 non-infringement. 262 F.3d at 1262. The Federal Circuit agreed with the district court’s construction
 10 of the claim term “mode” because it was implicitly defined in the intrinsic evidence to be limited to
 11 the three broad categories described in the patent’s specification. *Id.* at 1273. The Federal Circuit
 12 came to this conclusion in spite of the broad ordinary meaning of the non-technical term “mode.” *Id.*
 13 at 1270. The reasoning behind the Federal Circuit’s conclusion is that “a claim term may be clearly
 14 redefined without an explicit [definition]” and that “when a patentee uses a claim term throughout the
 15 entire patent specification, in a manner consistent with only a single meaning, he has defined that
 16 term ‘by implication.’” *Id.* at 1271 (citing *Vitronics*, 90 F.3d at 1582).

17 The Court also agreed with the district court’s conclusion that even claims not explicitly
 18 reciting the “mode” limitation were also limited to the three broad categories described in the patent’s
 19 specification. 262 F.3d at 1275. This conclusion was based on the Court’s recognition that “one of
 20 ordinary skill in the art would understand that the transceiver” described in the claim not including
 21 the “mode” limitation was the same as the one that included the “mode” limitation and was therefore
 22 limited by the implicit definition of the term “mode” in the intrinsic evidence. *Id.*

23 2. **The Patent’s File History Limits The Invention By Excluding What Was**
 24 **Disclaimed**

25 Second, the “doctrine of prosecution disclaimer is well established in Supreme Court
 26 precedent” and that doctrine has been adhered to by the Court of Appeals for the Federal Circuit “as a
 27 fundamental precept” in its “claim construction jurisprudence.” *Omega Eng’g, Inc. v. Raytek Corp.*,
 28 334 F.3d 1314, 1323 (Fed. Cir. 2003). Prosecution disclaimer refers to the Federal Circuit precedent

1 that “the prosecution history limits the interpretation of claim terms so as to exclude any
2 interpretation that was disclaimed during prosecution.” *See e.g., Southwall Techs., Inc v. Cardinal IG*
3 *Co.*, 54 F.3d 1570, 1576 (Fed. Cir. 1995) (“sputter-deposited dielectric” limited to one-step process
4 by patentee’s argument that dielectric was “directly deposited” and that invention therefore only
5 encompassed one-step process).

6 “As a basic principle of claim interpretation, prosecution disclaimer promotes the public
7 notice function of the intrinsic evidence and protects the public’s reliance on definitive statements
8 made during prosecution.” *Omega Eng’g*, 334 F. 3d at 1324. “[F]or prosecution disclaimer to attach
9 [Federal Circuit] precedent requires that the alleged disavowing actions or statements made during
10 prosecution be both clear and unmistakable.” *Id.* at 1325-6. In determining whether prosecution
11 disclaimer limits the scope of the claimed invention, a court must assess “whether a patentee
12 relinquished a particular claim construction based on the totality of the prosecution history, which
13 includes amendments to claims and arguments made to overcome or distinguish references.” *Rheox,*
14 *Inc. v. Entact, Inc.*, 276 F.3d 1319, 1326 (Fed. Cir. 2002); *See also, Biogen, Inc. v. Berlex Labs, Inc.*,
15 318 F.3d 1132, 1139 (Fed. Cir. 2003) (district court correctly found that based on examiner’s
16 statements “single DNA construct” limitation was basis on which all claims were allowed by
17 examiner and properly declined to interpret “method claims as free of this limitation”).

18 In *Biogen*, the Federal Circuit affirmed the district court’s granting of the defendant’s motion
19 for summary judgment of non-infringement. 318 F.3d at 1142. The principle issue on appeal was
20 whether the district court’s interpretation properly limited the method claims to the use of a “single
21 DNA construct” even though those method claims were not amended and did not mention the use of
22 a “single DNA construct.” *Id.* at 1134. The Federal Circuit agreed with the district court’s
23 conclusion that the examiner’s statements after a telephonic interview with the applicant in the
24 examiner’s Reason for Allowance, read objectively, establishes that the “single DNA construct” was
25 the examiner’s only basis for allowing all of the claims. *Id.* at 1139. Thus, even the method claims
26 that were not amended to include such a limitation were properly limited to the use of a “single DNA
27 construct.” *See e.g., ACCO Brands, Inc. v. Micro Sec. Devices, Inc.*, 346 F.3d 1075, 1079 (Fed. Cir.
28 2003) (“[I]t is incorrect to construe a claim as encompassing the scope that was relinquished in order

1 to obtain allowance of another claim, despite a difference in words used.”) (quoting *Modine Mfg.*
 2 *Co. v. United States Int’l Trade Comm’n*, 75 F.3d 1545, 1551 (Fed. Cir. 1996) (emphasis added)
 3 abrogated on other grounds by *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 234 F.3d
 4 558 (Fed. Cir. 2000); *See also, Springs Window Fashions LP v. Novo Indus., L.P.*, 323 F.3d 989, at
 5 995-6 (Fed. Cir. 2003) (distinguishing prior art patent limited claim scope to distinguishing features
 6 despite fact those features were not and are not reflected in claims).

7 Similarly, in the Federal Circuit’s *ACCO Brands* decision, which also affirmed the granting of
 8 summary judgment of non-infringement by the district court, the Court concluded that the “pin
 9 clause” of unamended “claim 10 must be construed in the same way” as the amended “pin clause of
 10 claim 1.” *ACCO Brands*, 346 F.3d at 1079. The Court came to this conclusion based on the
 11 statements in the examiner’s Reasons for Allowance. *Id.* Those statements repeated the arguments
 12 presented by the applicant and demonstrated “that the examiner and the applicant understood that the
 13 invention requires that the pin extends (actively) into the slot after rotation.” *Id.* The Court reasoned
 14 that although the pin clause of claim 10 was not amended and therefore, used different words for the
 15 pin clause than the words used in amended claim 1, claim 10 could not be construed to encompass the
 16 subject matter that was relinquished to obtain claim 1. *Id.*

17 3. The Patent’s Specification May Also Limit The Scope Of The Invention

18 “Whether an invention is fairly claimed more broadly than the ‘preferred embodiment’ in the
 19 specification is a question specific to the content of the specification, the context in which the
 20 embodiment is described, the prosecution history, and if appropriate the prior art, for claims should
 21 be construed, when feasible, to sustain their validity.” *Wang Labs., Inc. v. Am. Online, Inc.*, 197 F.3d
 22 1377, 1383 (Fed. Cir. 1999). “The usage ‘preferred’ does not of itself broaden the claims beyond
 23 their support in the specification.” *Id.*; *Bell Atl. Network*, 262 F.3d at 1273; *See also, Biogen*, 318
 24 F.3d at 1140 (Claims do not “enlarge what is patented beyond what the inventor has described as
 25 [his] invention.”) (quoting *Netword*, 242 F.3d at 1352).

26 In *Biogen*, the Court agreed with the district court’s conclusion “that the specification defines
 27 the invention as the use of a single DNA construct . . . and that the method and cell line claims, as
 28 well as the construct claims, are so limited.” 318 F. 3d at 1140. The Court recognized that although

1 the specification mentioned other known general techniques, the “specification does not describe or
2 present details of any other configuration for introducing these genes” but instead “describes only
3 linked DNA sequences and transformation procedures using single constructs . . .” *Id.* at 1136-37.
4 The Court noted that the claims may not “enlarge what is patented beyond what the inventor has
5 described as [his] invention.” *Id.* at 1140 (quoting *Netword*, 242 F. 3d at 1352). The Court
6 concluded that the district court’s interpretation properly limited the method claims to the use of a
7 “single DNA construct” even though those methods claims were not amended and did not mention
8 the use of a “single DNA construct.”

9 Similarly, in *Wang*, the Federal Circuit agreed with the district court’s conclusion that
10 although the general usage of the term “frame” encompassed both bit-mapped display systems and
11 character-based systems, the description in the patent of character-based systems limited the claimed
12 invention to character-based systems. 197 F.3d at 1381. In that case, the Federal Circuit affirmed the
13 district court’s grant of summary judgment to the defendants on the issue of infringement. 197 F.3d
14 1379. The only issue on appeal was whether the district court properly limited the interpretation of
15 the term “frame” to the “character-based protocols” described in the patent’s specification. *Id.* at
16 1380.

17 The Court concluded that the only embodiment described in the patent’s specification “is the
18 character-based protocol, and the claims were correctly interpreted as limited thereto.” *Id.* at 1383.
19 In reaching this conclusion, the Court recognized that “in order to be covered by the claims...subject
20 matter must be sufficiently described as the applicant’s invention to meet the requirements of [35
21 U.S.C.] section 112. This requirement was not met as to protocols other than character-based.” *Id.*
22 In other words, neither the mere mention of other protocols nor the usage of “preferred” in the patent
23 changed the fact that the patent’s description only supported character-based protocols. *Id.* at 1382.

24 Not only is the scope of the invention properly limited to what is supported by the patent’s
25 description, but the teachings in the patent’s description “‘about the problems solved by the claimed
26 invention, the way the claimed invention solves those problems’ and the prior art that relates to the
27 invention” all “‘provide valuable context for the meaning of the claim language.’” *ResQNet.com,*
28 *Inc. v. Lansa, Inc.*, 346 F.3d 1374, 1381 (Fed. Cir. 2003) (citations omitted). In fact, the patent’s

1 specification may certainly limit the claimed invention to important features that are essential for
 2 solving the problems in the prior art solved by the claimed invention. *See Gaus v. Conair Corp.*, 363
 3 F.3d 1284, 1289-90 (Fed. Cir. 2004) (limiting claimed invention to essential structure described in
 4 patent for solving problem in prior art).

5 In *Gaus*, the Federal Circuit reversed the jury's verdict of infringement under the doctrine of
 6 equivalents and entered judgment of non-infringement for the defendant. *Id.* at 1285. The principle
 7 issue was whether the "double conductor" was required to be structurally separate from the "voltage-
 8 carrying electrical operating unit." *Id.* at 1289. The Court concluded that this "structural separation"
 9 was required because the specification demonstrated that this "separation" is how one of the principle
 10 advantages of the invention over the prior art was achieved. *Id.* at 1289-90. The Court specifically
 11 noted that even if the claim language did not support the adopted construction, the specification's
 12 description that the "structural separation" was necessary for achieving the inventions advantages
 13 over the prior art presents "a clear case of disclaimer of subject matter." *Id.* at 1288 N.2 (citation
 14 omitted).

15 E. **Extrinsic Evidence May Never Be Used To Alter A Claim Term's Ordinary**
 16 **Meaning Or Any Other Meaning Established In The Intrinsic Evidence**

17 Extrinsic evidence may never be used to vary, contradict, expand, or limit any meaning found
 18 in or ascertained from the intrinsic evidence. *See e.g., Omega Eng'g*, 334 F.3d at 1332 (citing
 19 *Vitronics*, 90 F.3d at 1584-85). In fact, "[i]f the meaning of the claim limitation is apparent from the
 20 intrinsic evidence, it is improper to rely on extrinsic evidence other than that used to ascertain the
 21 ordinary meaning of the claim limitation." *Id.* (citing *Vitronics*, 90 F.3d at 1582) ("The claims,
 22 specification, and file history, rather than extrinsic evidence, constitute the public record of the
 23 patentee's claim, a record on which the public is entitled to rely."). This prevents a patentee from
 24 "proffer[ing] an interpretation for the purposes of litigation that would alter the indisputable public
 25 record . . . and treat the claims as a 'nose of wax.'" *Vitronics*, 90 F.3d at 1583 (quoting *Southwall*, 54
 26 F.3d at 1578).

1 III. SUMMARY OF THE ‘432 PATENT

2 A. The Goal Of The ‘432 Patent’s Alleged Invention Is To Enable Non-Experts To 3 Design ASICs

4 The ‘432 patent explains that the “invention provides a computer-aided design system and
5 method for designing an application specific integrated circuit . . .” (Exhibit 1 at Abstract). “An
6 application specific integrated circuit (ASIC) is an integrated circuit chip designed to perform a
7 specific function, as distinguished from standard, general purpose integrated circuit chips, such as
8 microprocessors, memory chips, etc.” (*Id.* at 1:13-17). Unlike general-purpose integrated circuit
9 chips such as microprocessors, which are designed so that they may execute software for performing
10 many different applications, an ASIC is designed for a specific function, for example, to control the
11 operation of a vending machine. (*Id.* at 12:39-44).

12 According to the ‘432 patent, the ASIC design processes of the prior art require the designer
13 to consider the required objectives and tasks for the desired ASIC and define the structural level
14 design specification for that ASIC. (Exhibit 1 at 1:19-23). This structural level design specification
15 (or netlist) must define the various hardware components and their required interconnections as well
16 as a system controller for synchronizing the operations of those hardware components. (*Id.* at 1:23-
17 27). Because defining structural level design specifications requires the ASIC designer to have an
18 “extensive and all encompassing knowledge” of these hardware components and their required
19 interconnections, the ‘432 patent concludes that the ASIC design process requires engineers with
20 highly specialized skills and expertise in VLSI design. (*Id.* at 1:28-32, 1:58-65).

21 The stated goal of the ‘432 patent’s claimed invention is to enable non-expert designers (*i.e.*,
22 designers not having highly specialized skills and expertise in VLSI design) to design ASICs.
23 (Exhibit 1 at 2:14-19). The ‘432 patent’s invention purports to accomplish this goal with computer-
24 aided design software that: 1) allows non-expert designers to work with “simple flowcharts” that they
25 are able to understand and which only requires them to know what the necessary logical steps are to
26 complete a task and, 2) provides and applies the essential VLSI design expertise needed to design
27 ASICs through the use of a rule-based expert system “extracted from expert ASIC designers.”
28 (Exhibit 1 at 2:24-27, 2:57-63; 4:5-34, *see also* Abstract)(emphasis added):

The flowchart is a highly effective means of **describing a sequence of logical operations**, and is well understood by software and hardware designers of **varying levels of expertise** and training.

* * *

The KBSC utilizes a **knowledge based expert system**, with a knowledge base **extracted from expert ASIC designers** with a high level of expertise in VLSI design to **generate from the flowchart a netlist**....

* * *

[T]he **design of an integrated circuit** at the structural level **requires** a design engineer with **highly specialized skills and expertise in VLSI design**. In the KBSC system of the present invention, however, integrated circuits can be designed at a functional level **because the expertise in VLSI design is provided and applied by the invention**. Allowing the designer to work with flowcharts...simplifies the task of designing custom integrated circuits.... The designer deals with an algorithm using **simple flowcharts**...and needs to know only the **necessary logical steps** to complete a task . . .

* * *

Using **flowcharts** to design custom integrated circuits **will allow a large number of system designers to access VLSI technology**, where previously only a small number of designers had the knowledge and skills to create the necessary structural level hardware descriptions.

The above portions of the '432 patent demonstrate that the "simple flowchart input" and the "rule-based expert system for generating a netlist from a flowchart" features are both critical and essential to achieving the '432 patent's stated goal of enabling non-experts to define the structural level specifications for ASICs that previously required highly skilled VLSI design engineers. As such, these two features must be required by the claimed invention. In fact, the '432 patent's inventor touted these same two essential features, *i.e.*, the "flowchart input form" and the "rule-based approach...to logic synthesis," as what he believed "clearly distinguished" his invention from existing prior art systems in an article published and presented at the same time that the application for the '432 patent was pending. (Exhibit 2 at 389).

B. **Rule-Based Expert System Software For Translating A Flowchart Input To A Netlist Is The Only Embodiment Of The '432 Patent's Claimed Invention**

There is only one embodiment of the system and method of the claimed invention described in the '432 patent and it is referred to as the Knowledge Based Silicon Compiler (also referred to herein as "KBSC"). (Exhibit 1 at 2:50-53). As its name suggests, the Knowledge Based Silicon Compiler software is an ASIC design methodology based upon expert systems technology. (*Id.* at

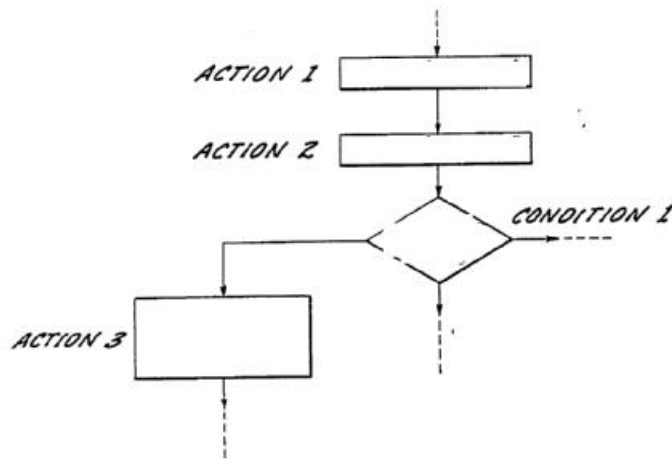
2:53-55). Specifically, the KBSC software uses a flowchart editor to permit non-expert designers to represent the desired ASIC in a flowchart format and generates a netlist from that flowchart input using a rule-based expert system. (*Id.* at 2:55-62):

The user interface of KBSC is a flowchart editor, which allows the designer to represent VLSI systems in the form of a flowchart. The KBSC utilizes a knowledge based expert system, with a knowledge base extracted from expert ASIC designers with a high level of expertise in VLSI design to generate from the flowchart a netlist . . .

More specifically, the only embodiment described in the '432 patent (the KBSC method) is an ASIC design method consisting of the following four basic steps (described in greater detail in the following paragraphs): 1) using the flowchart editor, the non-expert designer describes a sequence of operations for the desired ASIC in a flowchart format; 2) using the flowchart editor, the non-expert designer specifies a definition from the macro library for each action and condition represented in the flowchart; 3) the expert system selects the hardware cell for performing each specified definition in the actions and conditions specified in the flowchart; and, 4) the expert system generates a netlist which defines the necessary hardware cells and their required interconnection.

1. Step One: Using The Flowchart Editor of KBSC, The Non-Expert Designer Describes A Sequence Of Operations For The Target ASIC

In the sole embodiment described in the patent, the first step for defining the flowchart input specification for the ASIC to be designed is for the non-expert designer to represent the sequence of logical operations (*i.e.*, actions and conditions) in a flowchart format using the flowchart editor 21. (Exhibit 1 at 2:24-27). The flowchart editor is the user interface software program. It allows the user to display, create and edit flowcharts. (*Id.* at 4:56-59; 7: 6-7). Specifically, the flowchart editor 21 is used to create, edit, and delete the rectangles (actions), diamonds (conditions), and lines (transitions) in the flowchart to represent the series of logical steps and decisions needed to accomplish the task of the desired ASIC. (Exhibit 1 at 2:24-27; 3:50-59; 4:15-19; 7:12-23; 8:51-56). The result of this step is shown in the following figure, which is taken from Figure 5 in the '432 patent.



2. **Step Two: Using The Flowchart Editor of KBSC, The Non-Expert Designer Specifies A Macro For Each Action And Condition Represented In The Flowchart**

Once the non-expert designer has represented the sequence (or series) of actions and conditions (*i.e.*, operations) for the desired ASIC in the flowchart, the second step in defining input specification for the ASIC to be designed is use of the flowchart editor to assign (*i.e.*, specify) a definition from the stored definitions (*i.e.*, Macro Library) for each of the actions (rectangles) and conditions (diamonds) represented in the flowchart. (Exhibit 1 at 4:61-63; 5:20-22; 7:24-50; 8:23-26). Table 1 from the '432 patent shows a Macro Library containing the definitions for the available actions and conditions that may be specified in the flowchart.

The result of this specifying step is shown in Figure 5 of the '432 patent. Specifically, the ADD (A,B,C) definition from Table 1 is specified for ACTION 3 and the MOVE (A,B) definition from Table 1 is specified for ACTIONS 1 and 2. Similarly, the definition CMP (A,B) from Table 1 is specified for CONDITION 1.

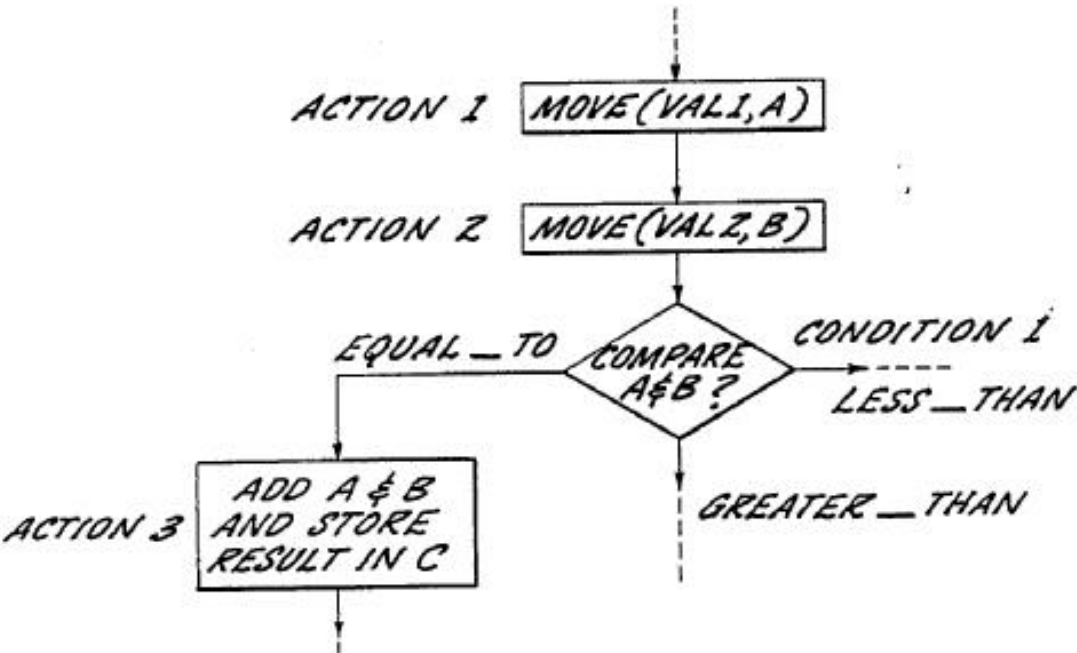


TABLE 1	
Macro	Description
ADD (A,B,C)	C = A + B
SUB (A,B,C)	C = A - B
MULT (A,B,C)	C = A * B
DIV (A,B,C)	C = A div B
DECR (A)	A = A - 1
INCR (A)	A = A + 1
CLR (A)	A = 0
REG (A,B)	B = A
CMP (A,B)	Compare A to B and set EQ,LT,GT signals
CMP0 (A)	Compare A to 0 and set EQ,LT,GT signals
NEGATE (A)	A = NOT (A)
MOD (A,B,C)	C = A Modulus B
POW (A,B,C)	C = A ^ B
DC2 (A,S1,S2,S3,S4)	Decode A into S1,S2,S3,S4
EC2 (S1,S2,S3,S4,A)	Encode S1,S2,S3,S4 into A
MOVE (A,B)	B = A
CALL sub-flowchart (A,B,...)	Call a sub-flowchart. Pass A,B,...
START (A,B,...)	Beginning state of a sub-flowchart
STOP (A,B,...)	Ending state of a sub-flowchart

After the definitions have been specified for each operation in the flowchart, as shown for example in Figure 5, the flowchart is then converted to an intermediate file, called a statelist. (Exhibit 1 at 7:1-3; 8:56-57). This statelist is used by the rule-based expert system in the steps that generate a netlist for the ASIC. (*Id.*). As explained further in Section II.C. below, the statelist is a list form description of the flowchart and an example statelist is shown in Appendix A of the '432 patent. (Exhibit 1 at 14:7-30).

3. ***Step Three: The Rule-Based Expert System of KBSC Selects The Hardware Cell For Performing Each Definition Specified In The Flowchart***

In this step, each definition assigned by the designer using the flowchart editor to each of the actions and conditions represented in the flowchart is matched by the cell selector software program of KBSC to an appropriate corresponding hardware cell description from a library of cells. (Exhibit 1 at 5:20-25, 8:23-32):

The macro library 23 contains a set of macros defining various actions which can be specified in the flowchart. For each macro function in the macro library 23 there may be several hardware cells in the cell library 34 of differing geometry and characteristics capable of performing the specified function.

* * *

The selection is based on the functional descriptions in the flowchart, as specified by the macros assigned to each action represented in the flowchart. ...To design a VLSI system from a flowchart description of a user application, it is necessary to match the functions in a flowchart with cells from a cell library.

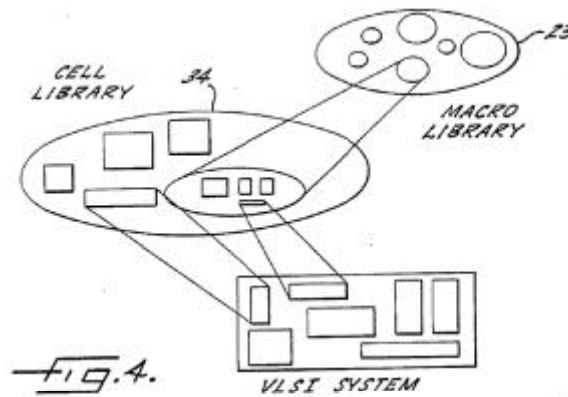
The cell selector software program of KBSC maps the specified definitions to the hardware cell descriptions using a number of design parameters and constraints such as cell function, process technology used, time delay, power consumption, etc. (Exhibit 1 at 8:26-29, 8:60-64, 9:52-61). This makes mapping each specified definition in the flowchart to the appropriate hardware cell description complicated. Consequently, the cell selector must use a rule-based expert system. (Exhibit 1 at 5:25-29, 8:29-60):

Using a rule based expert system with a knowledge base 35 extracted from expert ASIC designers, the KBSC system selects from the cell library 34 the optimum cell for carrying out the desired function.

* * *

The cell selector uses a knowledge base extracted from VLSI design experts to make the cell selection. ...This mapping needs the use of artificial intelligence techniques because the cell selection process is complicated.... The Cell Selector uses a rule based expert system to select the appropriate cell or cells to perform each action.

The rule-based expert system's mapping or matching of the specified definitions from the macro library to the hardware cell descriptions in the cell library is illustrated in Figure 4 of the '432 patent.



4. **Step Four: The Rule-Based Expert System Generates A Netlist**
Defining The Necessary Hardware Cells And Their Required
Interconnection

After the hardware cells have been selected by the rule-based expert system, the KBSC software generates the netlist. (Exhibit 1 at 9:64-65). The netlist, as described in the '432 patent, must have all of the necessary hardware cells that are required to implement the designated operations of the ASIC. Thus, the netlist must include a custom controller type hardware cell as well as the data paths and control paths necessary for connecting the selected hardware cells. (Exhibit 1 at 2:34-44; 4:39-43; 5:30-37):

The structural level definition includes a list of the integrated circuit hardware cells needed to achieve the functional specifications. ...The system also generates data paths among the selected hardware cells. In addition, the present invention generates a system controller and control paths for the selected integrated circuit hardware cells. The list of hardware cells and their interconnection requirements may be represented in the form of a netlist.

* * *

The netlist 15 includes a custom generated system controller, all other hardware cells required to implement the necessary operations, and interconnection information for connecting the hardware cells and the system controller.

* * *

[T]he cells selected by the cell selector 32, the controller information generated by the controller generator 33 and the data and control paths generated by the data/control path synthesizer 31 are all utilized by the PSCS program 30 to generate the netlist 15. The netlist is a list which identifies each block in the circuit and the interconnections between the respective inputs and outputs of each block.

1 The KBSC software uses a rule-based expert system to generate the controller type hardware cell and
 2 the necessary control and data paths that form the required interconnections for all of the hardware
 3 cells. (Exhibit 1 at Abstract, 5:8-12).

4 From the flowchart, the system and method uses artificial intelligence
 5 and expert systems technology to generate a system controller...and to
 generate data and control paths for operation of the integrated circuit.

* * *

6 Thus, with a functional flowchart input, PSCS generates a system
 7 controller, selects all other hardware cells, generates data and control
 paths, and generates a netlist describing all of this design information.

8 After the controller and the data and control paths have been generated, the rule based expert system
 9 then eliminates selected hardware cells that are redundant or unnecessary (Exhibit 1 at 13:59-66).

10 FIG. 14 shows the results of optimizing the circuit by applying rule 4 to
 11 eliminate redundant registers. As a result of application of this rule, the
 registers R2, R3, R7, R8, and R9 in FIG. 13 were removed. FIG. 15
 12 shows the block diagram after further optimization in which redundant
 comparators are consolidated. This optimization is achieved by PSCS
 13 program 30 by application of rule 5.

14 Finally, the controller, the other necessary hardware cells, and the data and control paths for
 15 connecting those hardware cells are used to define the netlist for the desired ASIC. (Exhibit 1 at
 16 13:67-14:3):

17 Having now defined the system controller block, the other necessary
 18 hardware blocks and the data and control paths for the integrated
 circuit, the PSCS program 30 now generates a netlist 15 defining these
 19 hardware components and their interconnection requirements.

20 C. The '432 Patent Does Not Describe A "List Form" Input Specification

21 Embodiment

22 Despite the fact that the KBSC's "flowchart editor" is the only input means described in the
 23 '432 patent, Ricoh, in its opening brief, claims that the single off-hand mention of a "list form" input
 24 in the '432 patent's specification and unasserted claim 2's unsupported requirement that the input
 25 means "comprises means specification for receiving user input of a list defining the series of actions
 26 and conditions" by themselves constitute another described embodiment. (Exhibit 1 at 2:21-24;
 27 14:67-15:2). They do not.

Ricoh's unsupported claim that there is a "list form" input specification embodiment described in the '432 patent is easily dispelled. The only "list" ever mentioned in the '432 patent is the intermediate file referred to as a statelist. The statelist is not user input, but rather is generated by the KBSC software from the input specification in the flowchart format. (Exhibit 1 at 7:1-2, 8:56-57). Although the '432 patent does not provide any description of the statelist's format, Appendix A appears to be an example statelist. (*Id.* at 14:7-30).

The only actual description of this "list form" appears to be provided in United States Patent No. 5,197,016 ("the '016 patent"), issuing from a continuation-in-part application which was filed 18 months later by the two inventors of the '432 patent. (Exhibit 3). Specifically, the '016 patent describes an Antecedent-Action-Form ("AAF") as containing the description of the system to be designed that is converted from the input specification in the flowchart format. (*Id.* at 7:33-9:53). The AAF file examples in the '016 patent are apparently the same as Appendix A in the '432 patent. (*Compare* Appendix A of Exhibit 1 at 14:7-30 with the example of Exhibit 3 at 9:26-35 and 9:21-53).

Unlike the '432 patent which provides no explanation or description of the statelist's format, the '016 patent does explain and describe this AAF file format. This description reveals that the AAF file format is nothing more than a descriptive list of the information provided in the flowchart that it was converted from.² Thus, the format of the statelist of Appendix A appears to only belatedly be explained in the '016 patent. The description confirms that the only "list" in the '432 patent is not a separate input specific embodiment but is instead an interim file format used by the KBSC software.

² Specifically, the '016 patent's AAF file format describes the sequence of the actions and conditions and then specifies the definitions for each of those actions and conditions. (Exhibit 3 at 8:35-9:53). More specifically, "start : ads" (using two dots) describes a transition between two actions whereas "excstart :: z2 Ida" (using three dots) describes a transition between two actions depending on condition "z2" being met. (*Id.*). After all of the transitions have been described, definitions for the described actions are specified in the following format "sta :: LOAD.1(mem, mar, acc)" (using four dots).

**D. The ‘432 Patent Does Not Describe An Embodiment For Automatically Mapping
The Stored Definitions**

The flowchart editor of the KBSC software is the only input means described in the ‘432 patent. Specifically, the input specification for the desired ASIC is defined by the designer in two steps using the flowchart editor for: “describing” the sequence of operations (*i.e.*, a series of actions and conditions) with the rectangles, diamonds, and lines with arrows of the flowchart; and “specifying” a stored definition (*i.e.*, “a macro selected from the macro library”) “to each action [or condition] represented in the flowchart . . .” (Exhibit 1 at 8:23-26; 8:50-55).

Ricoh’s proposed constructions for the “describing” and “specifying” steps improperly seeks to eliminate the second “specifying” step for defining the input specification for the ASIC to be designed. Specifically, Ricoh’s proposed construction for the “describing” step appears to require that the input specification be completely defined in that “describing” step. But then, while admitting that the designer may assign the macros in the flowchart, Ricoh’s proposed construction for the “specifying” step confusingly and inconsistently suggests that the “macros may also be ‘mapped’ automatically through application of rules.” Ricoh’s claim construction is contrary to the ‘432 patent’s description because the “specifying” step is the second of the two steps for defining the input specification (*i.e.*, specifying the macros).

The KBSC software cannot define the ASIC to be designed. The designer must provide the specification for the ASIC. In other words, the designer (not the KBSC software) determines the input to the KBSC (*e.g.*, the ASIC design) by assigning the macros to the “series” of actions (rectangles) and conditions (diamonds) represented in the flowchart. The KBSC software is not capable of inferring the macro (specified definition) that should be specified for each rectangle or diamond in the flowchart.

To support its construction and oppose Synopsys’ and Defendants’ construction for the “specifying” step, Ricoh relies on its claim that Synopsys’ and Defendants’ proposal excludes a so-called embodiment where “macros may also be ‘mapped’ automatically through application of rules.” Ricoh bases this claim solely on the portion of the ‘432 patent describing the use of the inference

1 engine and rules of the cell selector to generate a blocklist from the statelist which was converted
 2 from the flowchart description input. (Exhibit 1 at 9:6-18) (Ricoh's quote shown underlined):

3 Cell List Generation

4 FIG. 9 shows the cell list generation steps. The first step of the cell list generation is the
 5 transformation of the flowchart description into a structure that can be used by the Cell
 6 Selector. This structure is called a statelist. The blocklist is generated from the statelist by
 the inference engine. The blocklist contains a list of the functional blocks to be used in the
 integrated circuit. Rules of the following type are applied during this stage.

7 map arguments to data paths
 8 map actions to macros
 9 connect these blocks

10 In its proper context, however, Ricoh's quote from the '432 patent description demonstrates that the
 11 "map actions to macros" rule type is applied during the generation of a blocklist containing functional
 12 blocks from the statelist. The statelist is the converted flowchart description, which already includes
 13 the stored definitions specified by the designer. Moreover, the "connect these blocks" rule type in
 14 this portion of the specification demonstrates that the "macros" in the "map actions to macros" rule
 15 type refers to the functional blocks in the blocklist. Thus, Ricoh's assertion that there is an
 16 embodiment for "automatic mapping of stored definitions" is contrary to the '432 patent's
 description.

17 E. The '432 Patent's Specification Does Not Describe Any Embodiment For The 18 Step Of Generating Mask Data From The Netlist

19 As noted above, the KBSC software is the only embodiment described in the '432 patent.
 20 Although dependent claim 14 adds the step of generating mask data from the netlist produced by
 21 independent claim 13, from the '432 patent's description it is plain that the KBSC software is not
 22 capable of performing that step. (Exhibit 1 at 2:57-62):

23 The KBSC utilizes a knowledge based expert system, with a knowledge
 24 base extracted from expert ASIC designers with a high level of
 25 expertise in VLSI design to generate from the flowchart a netlist which
 26 describes the selected hardware cells and their interconnection
 requirements.

27 Instead, the '432 patent simply states that there are commercially available computer-aided design
 28 systems for producing mask data from the netlist data. (Exhibit 1 at 2:44-49, 4:44-46, 5:40-44):

From the netlist it is possible using...existing VLSI CAD layout systems to generate the detailed chip level topological information (e.g., mask data)....

* * *

The netlist can be used as input to any existing VLSI layout and routing tool 16 to create mask data 18 for geometrical layout.

* * *

Computer aided-design systems for cell placement and routing are commercially available which will receive netlist data as input and will lay out the respective cells in the chip, generate the necessary routing, and produce mask data . . .

Thus, the fact that the '432 patent fails to describe any embodiment for creating mask data is unmistakable and this failure renders claim 14 invalid pursuant to 35 U.S.C. § 112.

IV. THE '432 PATENT'S PROSECUTION HISTORY

A. The Original Application For The '432 Patent

The patent application which led to the issuance of the '432 patent was filed on January 13, 1988 with thirty claims (1-30). (Exhibit 4, Original Application). The '432 patent claims 13-17 at issue here correspond to application claims 20-26 in the original application. (*Id.* at 34-36). Application claim 20, later amended to incorporate the limitations recited in application claims 21 and 25 corresponds to the issued claim 13, which is the only independent claim in the present litigation. (*Id.*):

20. A computer-aided design process for designing an application specific integrated circuit which will perform a desired function comprising
 storing a set of definitions of possible actions and conditions;
 storing data describing a set of available integrated circuit hardware cells for performing the actions and conditions defined in the stored set;
 describing for a proposed application specific integrated circuit a series of actions and conditions;
 specifying for each described action and condition of the series of one of said stored definitions which corresponds to the desired action or condition to be performed; and
 selecting from said stored data for each of the specified definitions a corresponding integrated circuit hardware cell for performing the desired function of the application specific integrated circuit.

21. A process as defined in Claim 20 wherein said step of selecting a hardware cell comprises applying to the specified definition of the action and condition to be performed, a set of cell selection rules stored in a knowledge base.

25. A process as defined in Claim 20 including the further step of generating for the selected integrated circuit hardware cells a netlist defining the hardware cells

1 which are needed to perform the desired function of the integrated circuit and the
2 interconnection requirements therefore.

3 A year after the application was filed, on January 18, 1989, the examiner issued an office action
4 rejecting all thirty of the pending claims in the application. (Exhibit 4, January 1989 Office Action at
5 2) (“Claims 1-30 are rejected under 35 U.S.C. 103 as being unpatentable over Darringer et al. (U.S.
6 Patent No. 4,703, 435) or Darringer, et al. in view of Nash et al. . . .”).

7 1. The April 18, 1989 Amendment

8 In response to the examiner’s January 13, 1989 rejection of all thirty pending claims, a
9 completely new phrase “architecture independent” was added throughout the patent application in an
10 attempt to distinguish the claimed invention over the prior art. (Exhibit 4, April 1989 Amendment at
11 1-8). Specifically, the phrase “architecture independent” was added to the claims, the specification
12 including the Summary of the Invention, and the Abstract of the Disclosure. (*Id.*). Prior to this
13 amendment, the application described the claimed invention’s input as a functional specification
14 comprising a series of actions and conditions. (Exhibit 4, Original Application at 30 (Claim 5))
15 (“said functional specification being comprised of a series of actions and conditions”).

16 This amendment limits the ‘432 patent’s claimed invention’s input to “architecture
17 independent” functional specifications comprising a series of architecture independent actions and
18 conditions. (Exhibit 4, April 1989 Amendment at 8). To distinguish the ‘432 patent’s invention over
19 the functional specifications in the Darringer et al. prior art, this amendment defines “architecture
20 independent functional specifications” as functional specifications that exclude register-transfer level
21 descriptions as defined in the Darringer et al. prior art patent. (*Id.* at 9) (emphasis added):

22 A **very clear distinction** between Darringer and the present invention
23 is that the **input to the Darringer system is in the form of a register**
24 **transfer level flowchart control language.** Darringer et al., U.S.
25 Patent No. 4,703,435, column 4, lines 26-32. . . .**In contrast,** the
26 application specific circuit designer utilizing the present invention need
27 not possess any expertise common among highly skilled VLSI design
28 engineers since the **input to the present invention is in the form of**
an architecture independent functional specification.

A register-transfer level description input by the user would specify the control at the clock
cycle level for the ASIC to be designed. (Exhibit 5 at 5:27-35). In contrast, the invention in the ‘432

1 patent generates a controller, which provides the clock cycle level control for the ASIC to be
 2 designed, from the described sequence of operations represented in the flowchart. (Exhibit 4, April
 3 1989 Amendment at 8; *See also*, Exhibit 1 at 1:26-28; 2:39-41). Because of this, excluding a
 4 register-transfer level description input from the claimed invention is required for the only
 5 embodiment in the '432 patent to make sense. Moreover, as emphasized in the April 1989
 6 Amendment, an input that includes a register-transfer level description would require the expertise of
 7 highly skilled VLSI designers, and therefore a register-transfer level description is not encompassed
 8 by the "architecture independent functional specifications" of the '432 patent's claimed invention.
 9 (Exhibit 4, April 1989 Amendment at 9, 13, 16) (emphasis added):

10 In order **for a designer to utilize the Darringer system he/she must**
 11 **posses** a sophisticated understanding of the complexities of the circuit
 12 logic itself and therefore have the **specialized expert knowledge of a**
 13 **highly skilled VLSI design engineer.**
 14 * * *

15 A user of the Polaris and APLAS systems **must possess specialized**
 16 **knowledge of a highly skilled VLSI design engineer** relating to
 17 computer architecture and hardware **since input to the systems is in**
 18 **the form of register transfer level languages.**
 19 * * *

20 As was the case in Darringer et al. U.S. Patent No. 4,703,435, both of
 21 these papers by Darringer et al. disclose that even though the input may
 22 be in the form of a functional specification, **the designer must posses**
 23 **specialized knowledge of computer architecture and possibly even**
 24 **lower level hardware** in order to utilize the systems described.

25 Not only did the April 1989 Amendment limit '432 patent's claimed invention by adding the
 26 phrase "architecture independent" to exclude functional specifications that include a register-transfer
 27 level description, but that amendment also establishes (via the arguments made) that claim 13 (which
 28 includes application claim 21) requires the use of a rule-based expert system for selecting hardware
 cells from a hardware cell library. (Exhibit 4, April 1989 Amendment at 9-10, 11; see also 17)
 (emphasis added):

29 While Darringer may **synthesize logic** from a register transfer level
 30 flowchart description, **it provides no knowledge base** of any kind. **In**
 31 **contrast**, the present invention, ...provides **a knowledge base in the**
 32 **form of a rule based automatic logic synthesis component, i.e., an**
 33 **expert system.** Thus, Darringer does not teach the method of synthesis
 34 utilized by the present invention. Furthermore, although it is known in
 35 the art of automatic layout to utilize hardware cell libraries, **a rule**
 36 **based expert system has not been utilized to accomplish a task of**
 37 **selection of cells** from the cell library.

* * *

In contrast, the present invention, **utilizes a knowledge base which consists of a rule based expert system to synthesize logic**, *i.e.* data and control path, from an architecture independent functional flowchart description of the circuit design.

Besides requiring the use of a rule-based expert system for selecting the hardware cells, this amendment and the original application also confirm that a rule-based expert system for selecting hardware cells is comprised of a knowledge base of rules for selecting hardware cells and an inference engine for applying those cell selection rules to select appropriate hardware cells from the hardware cell library. (*Id.*; Exhibit 4, Original Application, (claims 6 and 16) at 30 and 33).

Finally, this amendment states that Dunn U.S. Patent No. 4,656,603 (“Dunn”) “discloses a rule based expert system.” (Exhibit 4, April 1989 Amendment at 17). The Dunn prior art patent demonstrates that rule-based expert systems are substantially different from conventional computer programs that use predefined algorithms. (Exhibit 6 at 1:30-56). Specifically, this prior art patent shows that rule-based expert systems use inference methods for applying the rules that make up the knowledge in the field to solve problems, whereas conventional software programs “solve problems in accordance with pre-defined algorithms and complete data sets.” (*Id.*). Thus, this amendment also confirms the substantial differences between using the rule-based expert system software programs of the alleged invention and using the predefined algorithms of conventional software programs of the prior art.

B. The October 19 1989 Examiner Interview Summary

Despite the limiting amendments and arguments made by the applicant in the April 1989 Amendment, on August 15, 1989 in a Final Office Action, the examiner again rejected all thirty of the pending claims. (Exhibit 4, August 1989 Office Action) (“Claims 1-30 are rejected under 35 U.S.C. 103 as being unpatentable over Darringer et al (U.S. Patent No. 4,703, 435) or Darringer et al in view of Nash et al. . . .”). As a result of this final rejection of all of the pending claims, the applicant and the examiner participated in an interview.

During that interview, the applicant and the examiner reached an agreement regarding the features of the ‘432 patent’s claimed invention including claim 13 (application claim 20) that

distinguished the claimed invention over the Darringer et al. prior art. (Exhibit 4, Examiner Interview Summary Record). That agreement unmistakably limits the '432 patent's claimed invention's input to a flowchart format. The agreement also unmistakably limits the '432 patent's claimed invention to the translation of that flowchart input to a netlist through the use of an expert system. (*Id.*) (emphasis added):

It is agreed that the features "flowchart editor" and "expert system for translating the flowchart into a netlist defining the necessary hardware cells of the integrated circuit" are patentable [*sic*] distinct from the reference identified above. Thus, applicant's attorney will amend the claims to include those features.

Besides limiting all of the pending claims, this agreement also required that the applicant's attorney amend the claims so that they include the features "flowchart editor" and "expert system for translating the flowchart into a netlist defining the necessary hardware cells of the integrated circuit." (*Id.*).

The "flowchart editor" feature is the software program or module that enables the designer to enter the architecture independent functional specification in a flowchart format for the ASIC to be designed. (Exhibit 4, Original Application at 13:1-11). Specifically, the flowchart editor software module is operable by a designer and provides the means for the designer to enter the architecture independent functional specification by performing the following two steps: 1) creating a flowchart having boxes representing actions, diamonds representing conditions, and lines with arrows representing the transitions between those actions and conditions; and 2) specifying for each box or diamond a particular action or condition from the available stored definitions (*i.e.*, the Macro Library). (Exhibit 4, Original Application at 13:1-14:45, 16:29-17:4). Thus, the agreement reached by the applicant with the examiner without a doubt limited both the "describing" and "specifying" steps of claim 13 (application claim 20) to using a flowchart format for the "describing" and "specifying" the architecture independent functional specifications of the claimed invention's input.

C. The November 15, 1989 Amendment

Shortly after reaching the agreement with the examiner, on November 15, 1989, the applicant filed an amendment. (Exhibit 4, November 1989 Amendment). In that amendment the applicant

1 amended claim 13 (application claim 20) to incorporate the language of application claim 21 and to
2 add the step of application claim 25. (Exhibit 4, November 1989 Amendment at 4-5):

3 20. (Twice Amended) A computer-aided design process for designing an
4 application specific integrated circuit which will perform a desired function
comprising

5 storing a set of definitions of architecture independent actions and conditions;
6 storing data describing a set of available integrated circuit hardware cells for
performing the actions and conditions defined in the stored set;

7 storing in an expert system knowledge base a set of rules for selecting
8 hardware cells to perform the actions and conditions;

9 describing for a proposed application specific integrated circuit a series of
architecture independent actions and conditions;

10 specifying for each described action and condition of the series one of said
stored definitions which corresponds to the desired action or condition to be
performed; and

11 selecting from said stored data for each of the specified definitions a
corresponding integrated circuit hardware cell for performing the desired function of
the application specific integrated circuit, said step of selecting a hardware cell
12 comprising applying to the specified definition of the action or condition to be
13 performed, a set of cell selection rules stored in said expert system knowledge base
14 and generating for the selected integrated circuit hardware cells a netlist defining the
15 hardware cells which are needed to perform the desired function of the integrated
16 circuit and the interconnection requirements therefor.

17 These amendments are consistent with the agreement reached between the applicant and the
18 examiner. First, they limit the step of “selecting from said stored data for each of the specified
19 definitions a corresponding integrated circuit hardware cell” by requiring that it be done using a rule-
based expert system. (Exhibit 4, November 1989 Amendment at 7) (emphasis added):

20 During the interview, the Examiner carefully reconsidered the prior art
21 and applicants’ claims, and upon reconsideration **agreed** that certain
22 features as defined in applicants’ claims, such as the “flowchart editor”
23 and the “expert system for translating the flowchart into a netlist
defining the necessary hardware cells of the integrated circuit”
patentably distinguish applicants’ invention from the prior art of record,
including Darringer et al. 4,703,435.

24 Second, they define the “expert system for translating” feature as a knowledge base
25 containing the cell selection rules and an inference engine for applying those rules to select the
26 appropriate hardware cells. (Exhibit 4, November 1989 Amendment at 2, 8) (emphasis added):

27 an expert system including a knowledge base containing rules for
28 selecting hardware cells from said cell library and **inference engine**
means for selecting appropriate hardware cells from said cell library in
accordance with the rules of said knowledge base

* * *

Claim 5 has also been amended to clearly distinguish it over the cited prior art by more clearly defining the expert system aspects of applicants' invention including the provision of a knowledge base containing rules for selecting hardware cells, [and] inference engine means for selecting appropriate hardware cells . . .

Third, the amendment also unmistakably confirms that the input of the claimed invention does not encompass functional specifications that include register-transfer level descriptions. (Exhibit 4, November 1989 Amendment at 6-7) (emphasis added):

[T]he **present invention distinguishes fundamentally over the prior art** by providing a system and **method for designing** an application specific integrated circuit at an **architecture independent** functional behavioral level. Thus, it is **not necessary for the user to have the specialized expert knowledge of a highly skilled VLSI design engineer.**

* * *

It was noted that while the Darringer et al. patent refers at some points in the specification to a so called "functional description", it is clear from a complete reading of the patent specification in context that the specifications used by **Darringer et al. are not truly at an architecture independent level**, but rather are at a lower level which is indeed hardware architecture dependent and **defines the system at a "register-transfer" level description**. This is quite clear from the description at column 5 beginning at line 27.

Thus, this amendment demonstrates that specifications that include "register-transfer" level descriptions are not "architecture independent" and therefore, are not encompassed by the '432 patent's claimed invention. (*Id.*) Darringer et al. at 5:27-35 (Exhibit 5 at 5:27-35) (emphasis added) defines register-transfer level description as a description that defines any control needed for the ASIC and consists of: 1) defining the inputs, outputs, and any registers of the proposed ASIC; and, 2) describing for a single clock cycle of the ASIC how the ASIC outputs and any registers are set according to the values of the ASIC inputs and the previous values of the registers:

[T]he process of this invention begins with . . . **a register-transfer level description** . . . [which] **consists of two parts**: a specification of the inputs, outputs, and latches of the chip to be synthesized; and a flowchart-like **specification of control**, describing for a single **clock cycle** of the machine how the chip outputs and latches are set according to the values of the chip inputs and previous values of the latches.

As demonstrated above, one of ordinary skill in the art would understand that the '432 patent's file history unmistakably limits the '432 patent's claimed invention in three critical ways. First, the file history limits the claimed invention's input by excluding functional specifications having register-transfer level descriptions. Second, the input of the claimed invention is also limited to a flowchart format. Finally, the file history unambiguously requires that in translating the flowchart to a netlist, the step of selecting the hardware cells must be performed by a rule-based expert system having an inference engine for applying the cell selection rules stored in the knowledge base of that rule-based expert system.

V. **SYNOPSYS' POSITIONS ON THE PROPER CONSTRUCTION OF THE DISPUTED CLAIM TERMS IN THE '432 PATENT**

In the following sections the proper meaning of the disputed claim terms of claims 13-17 will be discussed in the following manner. First the proper meanings for the disputed claim terms in claim 13 will be addressed and then the proper meanings for the disputed claim terms for claims 14-17 will be addressed. In addressing the proper meaning of claim terms for claim 13, all of the limitations are discussed, however, for clarity of explanation relating to the claimed method, the claim limitations have been loosely grouped as follows: preamble terms, input related issues, hardware cell selection using a rule-based expert system related issues, and the remaining limitations of the claim.

A. **The Proper Construction of "A Computer-Aided Design Process For Designing"**

The dispute regarding this claim limitation concerns Ricoh's inclusion of the phrase "during manufacture of a desired application specific integrated circuit (ASIC) chip that is designed to perform a specific purpose" and Synopsys' and Defendants' inclusion of the phrase "as distinguished from a computer-aided manufacturing process, which uses a computer to direct and control the manufacturing process" in their respective proposed constructions for this claim limitation. This dispute centers on Ricoh's effort to manufacture an argument that the "computer-aided design processes for designing application specific integrated circuits" of claims 13-17 somehow constitute processes "that are directly used in the manufacture of ASICs" pursuant to 35 U.S.C. § 271(g). Because Ricoh's proposal is contrary to the '432 patent's public record and Synopsys' and

1 Defendants' proposal properly highlights the distinction between computer-aided design and
2 computer-aided manufacturing as understood by persons of skill in the art from the '432 patent's
3 public record, Ricoh's litigation induced attempt to alter the public record should be rejected. Thus,
4 the Court should adopt Synopsys' and Defendants' proposal for this claim term.

5 First, the language in this limitation plainly provides that the claimed processes for claims 13-
6 17 are "computer-aided design process for designing." (Exhibit 1 at 16:34). The language is
7 unambiguous to a person of skill in the art and does not support the inclusion of a computer-aided
8 manufacturing process. There is also nothing in the remaining claim limitations for claims 13-17 that
9 supports broadening the claim to include anything other than design. In fact, the other limitations in
10 the claims demonstrate that the claimed processes solely produce information or data representing the
11 design of the desired ASIC. They are certainly not part of or even used by any of the processes for
12 manufacturing ASIC chips. (Exhibit 1 at 16:60-68) ("netlist" and "mask data").

13 Second, the '432 patent's description also states plainly that the invention "relates to the
14 design of integrated circuits, and more particularly relates to a computer-aided method...for
15 designing integrated circuits." (Exhibit 1 at 1:9-12). This is consistent with the '432 patent's title:
16 "Knowledge Based Method And Apparatus For **Designing** Integrated Circuits Using Functional
17 Specifications." (Exhibit 1) (emphasis added). Thus, like the claims, the '432 patent specification
18 also demonstrates that the processes of claims 13-17 only produce information representing the
19 design for the desired ASIC, *i.e.*, netlists and mask data. (Exhibit 1 at 4:35-46).

20 The '432 patent's specification never describes processes for manufacturing ASICs or for
21 manufacturing the photomasks used in those manufacturing processes. In fact, the specification
22 never even identifies a single manufacturing process used in the manufacture of ASICs. Ricoh's
23 proposed construction, which seeks to obfuscate the distinction between "designing" and
24 "manufacturing" ASICs, simply finds no support in the '432 patent's specification.

25 Not only is Ricoh's proposed construction contrary to the '432 patent's claims and its
26 specification, but it is also inconsistent with the statements made in the '432 patent's file history.
27 Specifically, the April 1989 Amendment provides: "The present invention is a computer-aided
28 design...method whereby the user can design application specific integrated circuits...." (Exhibit 4,

1 April 1989 Amendment at 8). Nothing in the ‘432 patent’s file history supports Ricoh’s attempt to
 2 broaden the claims to include a manufacturing process for a desired application specific integrated
 3 circuit (ASIC) chip.

4 Last, Ricoh’s proposal seeks to distort the obvious distinction between “manufacturing” and
 5 “designing” an ASIC as understood by persons of ordinary skill in the art from the ‘432 patent’s
 6 public record. Specifically, persons of skill in the art recognize that the processes for designing
 7 ASICs and the processes for manufacturing ASICs are separate, complex, and distinct sets of
 8 processes and that the processes for designing ASICs are simply not part of any of the processes for
 9 manufacturing ASICs. (Kowalski Decl. ¶¶ 7-10, 16-18, 65-66; *see also*, Exhibit 7 at 7-24; Exhibit 8
 10 at 76-82 and 274-278).

11 In fact, the processes for design and the processes for manufacturing are separated by a third
 12 distinct and often-proprietary set of complex and expensive processes for manufacturing the
 13 photomasks (also known as masks) used in the manufacturing processes. (*Id.* ¶¶ 9, 18). Because of
 14 the prohibitive cost of manufacturing these photomasks more than once for an ASIC chip, the goal of
 15 the designer is to perform these design processes only once. (*Id.* ¶ 18). Once the design is completed
 16 and the photomasks are made, the design processes (such as those in the ‘432 patent) are not
 17 performed again absent a desire or need to change the ASIC’s design. This is vastly different from
 18 the ASIC manufacturing processes that must be performed each time the ASIC chips are made. *Id.*

19 Ricoh relies on statements that the “netlist” and/or “mask data” are “required” or “needed” “to
 20 produce the particular application specific integrated circuit in chip form” as support for its
 21 construction. (*See e.g.*, Exhibit 1 at 2:44-49). But that does not mean that the ‘432 patent’s “design”
 22 processes for generating design “data” are themselves part of the manufacturing process of the actual
 23 ASIC chips. A chip must be designed before it is manufactured and thereby produced.³ However,

25 ³ All of the statements relied on by Ricoh are consistent with the understanding of persons of skill in
 26 the art that “mask data” is used to manufacture the photomasks (also known as masks) that are in turn
 27 subsequently used in the other distinct and separate processes that are directly used in the actual
 28 manufacture of the ASIC chips. (Kowalski Decl. ¶ 8-9, 65-66). In other words, because the
 processes that manufacture the ASIC chips require the photomasks, the mask data that is used to
 manufacture these photomasks are consequently required for producing the ASIC. *Id.* Similarly, a

(Continued...)

1 this does not support Ricoh's attempt to blur the distinction between the manufacturing processes for
 2 manufacturing ASIC chips and the design processes for designing them such as the processes of
 3 claims 13-17 of the '432 patent.

4 Design processes, like those claimed by claims 13-17, are predicate processes that merely
 5 identify what needs to be made. The design processes are simply not processes that are used to
 6 directly manufacture ASICs. In fact, in another article, the '432 patent's inventor recognizes that
 7 "design" processes and "manufacturing" processes are separate and distinct. (Exhibit 9 at 364-365).
 8 Ricoh's proposal directly conflicts with the claim, prosecution history, and the understanding of this
 9 claim limitation by persons skilled in the art. The Court should, therefore, adopt Synopsys' and
 10 Defendants' proposed construction for this claim limitation.

11 1. The Proper Construction of "Application Specific Integrated Circuit 12 (ASIC)"

13 The '432 patent explicitly defines this phrase as follows: "An application specific integrated
 14 circuit (ASIC) is an integrated circuit chip designed to perform a specific function, as distinguished
 15 from standard, general purpose integrated circuits, such as microprocessors, memory chips, etc."
 16 (Exhibit 1 at 1:13-17). The only difference between this definition and Synopsys' and Defendants'
 17 proposal (Joint Claim Construction Chart at "B") is the inclusion of a definition for the phrase
 18 "integrated circuit," *i.e.*, "an interconnected miniaturized electronic circuit on a single piece of
 19 semiconductor material." Defendants and Synopsys added the definition of "integrated circuit" for
 20 clarity. Otherwise, the construction for the phrase "application specific integrated circuit" would use
 21 the term "integrated circuit."

22 Ricoh's opening brief states (at page 13, footnote 9) that it does not oppose keeping the phrase
 23 "as distinguished from standard, general purpose integrated circuits, such s microprocessors, memory
 24 chips, etc." Yet, incredibly, Ricoh still seeks to eliminate the phrase "as distinguished from standard,
 25

26 (...Continued)

27 netlist is needed because it is the data that is used by the processes such as the place and route for
 28 generating the mask data. (Exhibit 1 at 4:44-46).

1 general purpose integrated circuits, such as microprocessors, memory chips, etc.” from the definition
 2 of ASIC, contrary to the ‘432 patent’s specification. Regardless of whether Ricoh opposes keeping
 3 this phrase or not, Ricoh’s attempt to exclude this “explicit” language from the ‘4332 patent’s
 4 definition of ASIC simply because it deems it to be “implicit” in its proposed definition is directly
 5 contrary to the ‘432 patent and should be rejected. Synopsys’ and Defendants’ proposal for this
 6 disputed claim phrase, unlike Ricoh’s proposal, incorporates the ‘432 patent’s explicit definition for
 7 ASIC and comports with the meaning that one of skill in the art would assign to the term. (Exhibit 1
 8 at 1:13-17; Kowalski Decl. ¶ 19). Integrated circuits such as microprocessors, memor chips, and
 9 other general-purpose integrated circuits are not designed for a “specific function” but are instead
 10 designed to perform many different functions depending on the software application being executed
 11 by or using them. The Court should, therefore, adopt Synopsys’ and Defendants’ proposed
 12 construction for “application specific integrated circuit.”

13 2. **The Claim Limitations Directed To The Input Of The Claimed Method** 14 **For Claims 13-17**

15 The following three claim limitations are directed to the input for the claimed processes of
 16 claims 13-17 for the ‘432 patent:

- 17 1. storing a set of definitions of architecture independent actions and conditions;
- 18 2. describing for a proposed application specific integrated circuit a series of architecture
 independent actions and conditions;
- 19 3. specifying for each described action and condition of the series one of said stored definitions
 which corresponds to the desired action or condition to be performed.

20
 21 These three claim limitations should be construed consistently and as provided in portions C, D, E, K,
 22 L, and M in Synopsys’ column of the Joint Claim Construction Chart. Specifically, these three claim
 23 limitations limit the input steps for the claimed method of claims 13-17 by requiring that:

- 24 1. the designer represents a sequence of logical steps and decisions in a flowchart format;
- 25 2. the designer assigns one stored definition for each logical step and decision described in the
 flowchart;
- 26 3. the flowchart input specification excludes a register transfer level (RTL) description, which
 defines any control at the clock cycle level needed for the ASIC.

1 Ricoh proposes constructions for these three claim limitations that attempt to alter the indisputable
 2 public record for the '432 patent and recapture claim scope that was relinquished to obtain allowance
 3 of claims 13-17. As demonstrated below, these three requirements are not only dictated by the public
 4 record for the '432 patent (*i.e.*, the claims, specification, and file history) but are also consistent with
 5 the ordinary meaning of the claim language and the extrinsic evidence including expert testimony.

6 a. **The Designer Represents A Sequence Of Logical Steps And**
 7 **Decisions In A Flowchart Format**

8 The “describing for a proposed application specific integrated circuit a series of architecture
 9 independent actions and conditions” claim language dictates that the “describing” be of “a series of
 10 actions and conditions.” Specifically, the prepositional phrase “for a proposed application specific
 11 integrated circuit” refers only to the fact that this “describing” step is performed for the proposed
 12 ASIC. The dispute here is focused on what is required by the language “describing . . . a series of
 13 architecture independent actions and conditions” in this step.

14 The '432 patent's specification defines the “describing . . . a series of architecture independent
 15 actions and conditions” step in claim 13 to require that “the designer represents a sequence of logical
 16 steps and decisions in a flowchart format.” (Exhibit 1 at Figs. 1a, 5, & 7; 2:21-27; 3:20-22; 3:50-59;
 17 4:5-22; 4:35-38; 7:12-23). There is no question that the goal of the '432 patent is to make it possible
 18 for technicians not having VLSI design expertise to design ASICs. (Exhibit 1 at 1:17-19; 2:14-20):

19 A highly skilled design engineer having specialized knowledge in VLSI
 20 circuit design is ordinarily required to design a ASIC.

* * *

21 [T]he present invention, for the first time, opens the possibility for the
 22 design and production of ASICs by designers, engineers and
 technicians who may not possess the specialized expert knowledge of a
 highly skilled VLSI design engineer.

23 The '432 patent plainly provides that this is achieved by allowing non-expert designers to define the
 24 input specifications for the proposed ASIC by representing a sequence of logical steps and decisions
 25 in a flowchart format. (Exhibit 1 at 2:21-27, 4:11-18, 4:29-34):

26 The functional architecture independent specifications of the desired
 27 ASIC can be defined in a suitable manner, such as in list format or
 28 preferably in a flowchart format. The flowchart is a highly effective
 means of describing a sequence of logical operations, and is well

understood by software and hardware designers of varying levels of expertise and training.

* * *

Allowing the designer to work with flowcharts...simplifies the task of designing custom integrated circuits.... The designer deals with an algorithm using simple flowcharts...and needs to know only the necessary logical steps to complete a task....

* * *

Using flowcharts to design custom integrated circuits will allow a large number of system designers to access VLSI technology, where previously only a small number of designers had the knowledge and skills to create the necessary structural level hardware descriptions.

Not only is the ability to work with and define the input for the desired ASIC essential to achieve the '432 patent's goals but the flowchart editor software program is the only user interface described in the '432 patent. (Exhibit 1). Moreover, despite Ricoh's claim to the contrary, the off-hand mention in the '432 patent to a "list format" without any explanation or any other description in the '432 patent as well as the use of the words "preferred" or "preferably" in describing the one and only flowchart input form embodiment in the '432 patent are simply not enough to support a broader interpretation for this step. *See e.g., Biogen*, 318 F.3d at 1140 (Claims do not "enlarge what is patented beyond what the inventor has described as [his] invention.") (quoting *Netword*, 242 F.3d at 1352); *Wang Labs.*, 197 F.3d at 1383 ("The usage 'preferred' does not of itself broaden the claims beyond their support in the specification.")).

To the extent that there is any doubt that the '432 patent's specification requires that "the designer represents a sequence of logical steps and decisions in a flowchart format," such doubt is obliterated by the '432 patent's file history. Specifically, the file history unmistakably demonstrates the input of the claimed invention is limited to the designer's use of a flowchart editor to represent a sequence of logical steps and decisions in a flowchart format. (Exhibit 4, April 1989 Amendment at 11; October 1989 Examiner Interview Summary; November 1989 Amendment at 7) (emphasis added):

[T]he **present invention**, **utilizes** a knowledge base which consists of a rule based expert system to synthesize logic...from an architecture independent functional **flowchart** description of the circuit design.

* * *

It is **agreed** that the features "**flowchart editor**" and "expert system for translating the **flowchart** into a netlist defining the necessary hardware cells of the integrated circuit" are patentable [*sic*] distinct from the reference identified above.

* * *

During the interview, the Examiner carefully reconsidered the prior art and applicants' claims, and upon reconsideration agreed that certain features as defined in applicants' claims, such as the "**flowchart editor**" and the "expert system for translating the **flowchart** into a netlist defining the necessary hardware cells of the integrated circuit" **patentably distinguish applicants' invention from the prior art** of record, including Darringer et al. 4,703,435.

The flowchart editor allows the designer to represent a sequence of operations in a flowchart having boxes representing actions, diamonds representing conditions, and lines with arrows representing the transitions between those actions and conditions. (Exhibit 4, Original Application at 13:1-11).

Like the specification, the file history also claims that the ability of non-expert designers to work with and define the input of the claimed invention is what distinguishes the '432 patent's invention over the prior art. (*See e.g.*, Exhibit 4, April 1989 Amendment at 8):

By designing at [architecture independent functional behavioral] specification level, the user need not possess the specialized expert knowledge of a highly skilled VLSI design engineer. The architecture independent functional specification of the desired application specific integrated circuit is preferably defined in a flowchart format.

Time after time in the file history, the '432 patent's input specification was distinguished over the input specifications of the prior art cited during the file history because those inputs required the designer to possess specialized expert knowledge. (Exhibit 4, April 1989 amendment at 9, 11-14, 16, 17, November 1989 amendment at 7). Thus, like the specification, the file history stresses the importance of enabling non-expert designers to design ASICs by allowing them to work with simple flowcharts inputs to represent only the necessary logical steps—the only input format described in the '432 patent.

Besides being dictated by the public record—*i.e.*, the '432 patent, its file history, and the cited prior art—the requirement that "the designer represents a sequence of logical steps and decisions in a flowchart format" is also supported by the dictionary definitions for the words describe, series, sequence, and operation. (Exhibit 10 at 479; Exhibit 11 at 343, 1073, 1074):

Describe – to represent by figure, model, or picture;
Series – a number of things or events of the same class coming one after another in spatial or temporal succession;
Sequence – a continuous or connected series;

1 Operation – an action performed on one or more data items, such as adding,
2 multiplying, comparing, or moving.

3 These definitions are consistent with a requirement that the sequence of operations be represented in
4 a flowchart format. (*Id.*).

5 Despite the overwhelming evidence in the ‘432 patent’s public record, Ricoh proposes a
6 construction that fails to acknowledge that the input specification of the ‘432 patent’s claimed
7 invention (including claims 13-17) is limited to a flowchart format. To support its position that the
8 input specifications are not limited to a flowchart format Ricoh argues that: (1) the Examiner
9 Interview Summary reflected only the examiner’s beliefs and cannot be deemed an agreement
10 reached between the examiner and applicant limiting the claims to a flowchart format; (2) that unlike
11 some of the other claims, claims 13-17 were not amended and did not explicitly include the flowchart
12 format feature of those other claims; and (3) requiring that the input specification be in a flowchart
13 format would improperly exclude the so-called “list form” embodiment. Ricoh’s arguments are
14 neither supported by the intrinsic evidence nor the legal principles for claim construction. These
15 arguments should therefore be rejected.

16 First, contrary to Ricoh’s claim, the Examiner Interview Summary explicitly states that the
17 examiner and the applicant reached agreement. Specifically, the Examiner Interview Summary form
18 showed that the examiner checked the box stating that: “**Agreement was reached** with respect to
19 some or all of the **claims** in question.” (Exhibit 4 at October 1989 Interview Summary). After
20 identifying all the claims discussed (which included claim 13 (application claim 20)), this Summary
21 Form then provides the following lead in to the space provided for the examiner’s summary that
22 shows that the summary is for providing what was agreed to with respect to the claims. (*Id.*).
23 (“Description of the general nature of **what was agreed to** if an agreement was reached, or any other
24 comments:”). In the space provided for the examiner’s summary he provided the following summary
25 of what was agreed to with the applicant during the interview: “It is **agreed** that the features
26 ‘**flowchart editor**’ and ‘expert system for translating the **flowchart** into a netlist defining the
27 necessary hardware cells of the integrated circuit’ are patentable [*sic*] distinct from the reference
28

1 identified above.” (*Id.*). The Examiner Interview Summary, read objectively, establishes that the
 2 features “**flowchart editor**” and “expert system for translating the **flowchart** into a netlist” were the
 3 examiner’s only basis for allowing all of the claims including claim 13. *See, Biogen*, 318 F.3d at
 4 1139 (district court correctly limited the claims based on objective reading of examiner’s statements).

5 Equally misguided is Ricoh’s argument that “[i]f the patentee intended to limit the patent
 6 claim 13 to the same scope (*i.e.*, flowchart format), the patentee would have used the same language,
 7 or at least added the term “flowchart” to patent claim 13, as patentee had done for patent claim 18.”
 8 The Federal Circuit has flatly rejected this identical argument. *See e.g., Biogen*, 318 F.3d at 1139;
 9 *ACCO Brands*, 346 F.3d at 1079 (“It is incorrect to construe a claim as encompassing the scope that
 10 was relinquished in order to obtain allowance of another claim, despite a difference in words used.”)
 11 (quoting *Modine Mfg. Co.*, 75 F.3d at 1551) (emphasis added).⁴ Thus, neither Ricoh’s failure to
 12 amend claim 13 using the same language as another claim, nor the fact that claim 13 does not use the
 13 word flowchart change the fact that the ‘432 patent’s file history indisputably reveals that applicant
 14 relinquished all other input specification formats other than the flowchart format.

15 Ricoh’s argument that limiting claims 13-17 to a flowchart format improperly excludes “the
 16 disclosed preferred embodiment dealing with a ‘list form’ of architecture independent functional
 17 specification” again ignores and is contrary to the intrinsic evidence as well as the Federal Circuit’s
 18 precedent on claim construction. First, there is no “list form” preferred embodiment described in the
 19 ‘432 patent. *See* Section II.c. Moreover, the mere mention of a this “list form” cannot expand the
 20 claims beyond what is described and therefore, supported by the ‘432 patent’s description. *See Wang*
 21 *Labs.*, 197 F.3d at 1383; *Bell Atl. Network*, 262 F.3d at 1273; *See also, Biogen*, 318 F.3d at 1140
 22 (Claims do not “enlarge what is patented beyond what the inventor has described as [his] invention.”)
 23 (quoting *Netword*, 242 F.3d at 1352). Besides, even assuming that there were a “list form” input
 24 specification embodiment described in the ‘432 patent (which there is not), here the unmistakable
 25

26
 27 ⁴ Our case is even stronger because “architecture independent” was added to claim 13, expressly
 28 disclaiming the scope of the claim that conflicts with the agreement reached between the applicants
 and the examiner.

1 disclaimer in the '432 patent's file history of any input specification formats other than the flowchart
 2 format mandates excluding the disclaimed embodiment, even if it is a preferred embodiment. *See*
 3 *Springs Window Fashions*, 323 F.3d at 996 (“[W]e have adopted claim constructions excluding an
 4 embodiment when the prosecution history requires the claim construction because of disclaimer.”);
 5 *Rheox, Inc.*, 276 F.3d at 1327 (disclaimer in file history is highly persuasive evidence warranting
 6 exclusion of preferred embodiment). Thus, Ricoh's arguments do not change the fact that the
 7 claimed invention of the '432 patent's input specifications are properly limited to a flowchart format
 8 based on the '432 patent's public record. In fact, this requirement is also consistent with the
 9 inventor's own contemporaneous article, which claims that the flowchart input form is vital to system
 10 design and clearly distinguishes his invention from the prior art on this basis. (Exhibit 2 at 379, 389).

11 Finally, aside from its failure to acknowledge the requirement that the input specification
 12 must be in a flowchart format, Ricoh's proposed construction is also contrary to the claim language
 13 because it eliminates the requirement that the designer must describe “a series.” Instead, Ricoh's
 14 proposal merely requires an input specification “containing the desired functions.” Not only does
 15 this contradict the actual words used in the claim (*i.e.*, “describing...a series”) but it is also contrary
 16 to the requirement in the patent's description that the designer must “describ[e] a sequence of logical
 17 operations.” (Exhibit 1 at 2:24-27). Last, Ricoh's construction would render the claimed method of
 18 claims 13-17 inoperative because without an input specification “describing the sequence” of the
 19 necessary logical steps and decisions to complete the ASIC's task, the necessary controller for
 20 synchronizing the operation of the other hardware cells could not be generated. (Kowalski Decl. ¶
 21 49). Thus, the Court should reject Ricoh's proposed construction and instead adopt Synopsis' and
 22 Defendants' proposal.

23 **b. The Designer Assigns One Stored Definition For Each Logical Step**
 24 **And Decisions Described In The Flowchart**

25 The “specifying for each described action and condition of the series one of said stored
 26 definitions which corresponds to the desired action or condition to be performed” claim language
 27 requires that the “specifying” be of “one of said stored definitions which corresponds to the desired
 28 action or condition to be performed.” Specifically, the prepositional phrase “for each described

1 action and condition of the series” refers only to the fact that this “specifying” step is performed for
 2 each action and condition in the described series resulting from the previous “describing” step. Thus,
 3 the claim language for this “specifying” step requires that “the designer assigns one stored definition
 4 for each logical step and decision described in the flowchart.”

5 Not only is this requirement mandated by the claim language but it is also apparent from the
 6 other ‘432 patent claims. Specifically, these other claims demonstrate that for each action and
 7 condition (operations) described, this step requires the designer to “specify” one stored definition
 8 (macro from a macro library) and that this “specifying” step and the previous “describing” step
 9 together are the steps that define the input specification for the claimed invention’s method. (Exhibit
 10 1, claim 1 at 14:41-46, claim 9 at 15:39-45, claim 11 at 16:9-17) (emphasis added):

11 said functional specification being comprised of a series of operations
 12 comprised of actions and conditions, said input specification means
 13 including means to permit the user to specify for each operation a
macro selected from said macro library;
 * * *

14 flowchart editor means operable by a user for creating a flowchart
 15 having elements representing said architecture independent operations;
 16 said flowchart editor means including macro specification means for
 17 permitting the user to specify for each operation represented in the
 18 flowchart a macro selected from said macro library;
 * * *

19 flowchart editor means operable by a user for creating a flowchart
 20 having boxes representing architecture independent actions, diamonds
 21 representing architecture independent conditions, and lines with arrows
 22 representing transitions between actions and condition and including
 23 means for specifying for each box or diamond, a particular action or
 24 condition to be performed.

25 These other claims show that the functional input specifications of the ‘432 patent’s claimed
 26 invention are defined by the designer in two separate steps: the first is the “describing” of the
 27 sequence of operations for the proposed ASIC in a flowchart and the second is the designer’s
 28 “specifying” of one stored definition for each of those described operations in the flowchart. (*Id.*)

Besides being required by the language of the ‘432 patent’s claims, the requirement that “the
 designer assigns one stored definition for each logical step and decision described in the flowchart” is
 also supported by the specification. Specifically, the ‘432 patent also demonstrates that this
 “specifying” step and the previous “describing” step together are the steps that define the input

specification for the claimed invention’s method and that the “specifying” step requires the designer to assign one stored definition (macro) for each logical step and decision (operation) described in the flowchart. (Exhibit 1 at 5:20-22; 7:24-26; 8:51-55):

The macro library 23 contains a set of macros defining various actions which can be specified in the flowchart.

* * *

Edit actions allows the **designer to assign** actions to each box. These actions are made up of macro names and arguments.

* * *

The flowchart editor [is] used to draw the rectangles, diamonds and lines of the flowchart, **to assign a macro** selected from the macro library 23 to each action represented in the flowchart....

(See also, Exhibit 1 at Fig. 5, 3:20-22; 4:61-63; 8:23-26) Finally, the requirement that the “designer” does the “assigning” of the stored definitions is also consistent with the dictionary definition for “specify.” (Exhibit 11 at 1132) (Specify – to name or state explicitly or in detail; to include as an item in a specification). These definitions imply that “specifying” is an act performed by a person.

Ricoh’s proposed construction is contrary to the actual words used in the claim. First, the claim language unambiguously requires that this “specifying” step be performed “for each described action and condition of the series.” Ricoh’s proposal improperly seeks to eliminate this explicit connection between the “describing” and the “specifying” steps by replacing the phrase “for each described action and condition of the series” with the phrase “for each desired function to be performed by the desired ASIC.” Ricoh’s attempt to broaden this unambiguous claim language is simply not supported by the ‘432 patent’s public record and is in fact contrary to it.

Ricoh also wrongly claims that the term “specifying” is redefined by the ‘432 patent’s specification to mean “mapping or associating a desired function to be performed by the manufactured ASIC with a definition from the library of definitions.” Ricoh attempts to support this extraordinary redefinition of the word “specifying” by: (1) quoting to portions of the ‘432 patent that actually support Synopsys’ and Defendants’ proposed construction (*See e.g.*, Exhibit 1 at 7:24-25) (“Edit actions allows the designer to assign actions to each box.”); and (2) claiming that this redefinition is necessary to avoid excluding yet another so-called embodiment in the ‘432 patent.

1 First, the '432 patent demonstrates that this "specifying" refers to the designer assigning one
 2 stored definition for each described action and condition in the series of the previous "describing"
 3 step. (Exhibit 1 at 7:24-26; 8:51-56). Thus, "specifying," consistent with its ordinary dictionary
 4 meaning and description in the '432 patent's specification refers to the "designer's assigning" and not
 5 to any automated "mapping or associating" as Ricoh claims.

6 Second, contrary to Ricoh's claim, there is no embodiment described in the '432 patent for
 7 "automatically mapping" each described action and condition in the series with the stored definitions
 8 for those actions and conditions. *See* Section II. d.⁵ As demonstrated in section II.d of this brief,
 9 Ricoh's claim that "macros may also be 'mapped' automatically through application of rules" is
 10 contrary to the '432 patent's description. Specifically, the portion of the '432 patent relied on by
 11 Ricoh is directed to generating a blocklist of functional blocks from the statelist, not to the
 12 "specifying" step. (Exhibit 1 at 9:6-18). This statelist is converted from the flowchart, which already
 13 had the designer assigned macros for each of the described actions and conditions. (Exhibit 1 at 7:1-
 14 3; 8:56-57). Last, even if there were an automatic mapping embodiment (which there is not), the
 15 existence of such an alternative embodiment, by itself, would not support the extraordinary definition
 16 of "specifying" proposed by Ricoh.

17 The Court should reject Ricoh's proposed construction and instead adopt Synopsys' and
 18 Defendants' proposal.

19 **c. The Flowchart Input Specification Excludes A Register Transfer**
 20 **Level (RTL) Description, Which Defines Any Control Needed For**
 21 **The ASIC At The Clock Cycle Level**

22 This dispute centers on the effect of Ricoh's adding the completely new phrase "architecture
 23 independent" throughout the patent application in an attempt to distinguish the claimed invention
 24 over the prior art, including Darringer et al. (Exhibit 4, April 1989 Amendment at 1-8). Specifically,
 25
 26

27 ⁵ Equally misguided is Ricoh's argument that Synopsys' and Defendants' construction for this step is
 28 "particularly improper" because it excludes this nonexistent embodiment.

1 the phrase “architecture independent” was added to the claims, and the specification including the
2 Summary of the Invention, and the Abstract of the Disclosure. (*Id.*).

3 Ricoh added this vague phrase to argue before the United States Patent Office that the phrase
4 “architecture independent” distinguished the claimed invention over prior art functional
5 specifications because they include register-transfer level descriptions. Now, however, standing
6 before this Court, Ricoh wishes to take the diametrically opposed position, *i.e.*, that register-transfer
7 level descriptions are not excluded by the phrase architecture independent. This is a classic example
8 of ignoring the public record and treating the claims as a nose of wax.

9 The original application for the ‘432 patent was directed towards the input of functional
10 specifications, which were comprised of a series of actions and conditions. (Exhibit 4, Original
11 Application at 1, 3, 4-5, 6, 7, 8, 29, 30, and 34). The original application for the ‘432 patent and the
12 issued ‘432 patent demonstrate that the “series of actions and conditions” are the “sequence of logical
13 operations” necessary to complete the task of the ASIC to be designed and that those logical
14 operations consist of actions (steps) and conditions (decisions). (Exhibit 1 at 2:24-27; 3:20-22; 3:52-
15 55; 6:1-54; Exhibit 4, Original Application at 5:12-13; 6:11-13; 10:21-12:9). The question here is:
16 how did Ricoh’s adding of the phrase “architecture independent” alter the meaning of the “series of
17 actions and conditions” that comprise the input functional specifications of the claimed invention?
18 The file history provides the answer to that question.

19 The prior art including the Darringer et al. patent described functional input specifications.
20 (*See e.g.*, Exhibit 5 at 5:21-26; 14:61-63). The applicant admitted this fact during the file history.
21 (Exhibit 4, April 1989 Amendment at 9). Because functional input specifications, including actions
22 and conditions, were well known in the prior art, such as the Darringer et al. patent, the patent
23 examiner correctly rejected all of the claims. (Exhibit 4, January 1989 rejection at 1-3). More than a
24 year after the original application was filed, the applicant added the phrase “architecture
25 independent” to distinguish the cited prior art, including the Darringer et al. patent relied on by the
26 examiner to reject all of the claims. (Exhibit 4, April 1989 amendment at 1-10).

27 But the phrase “architecture independent” is vague and imprecise. (Kowalski Decl. ¶ 22). It
28 is also not defined in the ‘432 patent. (Exhibit 1). Because this phrase is used in claims 13-17,

1 therefore, it renders them all invalid for failing to meet the “definiteness” requirement of 35 U.S.C. §
 2 112. U.S.C. § 112 ¶ 2. (“The specification shall conclude with one or more claims particularly
 3 pointing out and distinctly claiming the subject matter which the applicant regards as his invention.”).
 4 In addition to being invalid pursuant to § 112, claims 13-17 are also invalid because the addition of
 5 “architecture independent” to the claims and specification constituted “new matter,” which is
 6 prohibited by 35 U.S.C. § 132. 35 U.S.C. § 132(a). (“No amendment shall introduce new matter into
 7 the disclosure of the invention.”).

8 At the same time that the applicant added the phrase “architecture independent” to the
 9 specification and all of the claims, the applicant repeatedly argued that the input specifications of the
 10 prior art including Darringer et al. were not “architecture independent” simply because their input
 11 specifications included register-transfer level descriptions. (Exhibit 4, April 1989 Amendment at 9
 12 and 12-13, November 1989 Amendment at 7). Because of this amendment and the arguments made
 13 by the applicant in the ‘432 patent’s file history, the applicants addition of “architecture independent”
 14 to the claims excluded at least register-transfer level descriptions from the claimed invention.
 15 (Exhibit 4, April 1989 amendment at 9 and 2-13, November 1989 amendment at 7). In other words,
 16 the applicant argued that the architecture independent functional input specifications of the claimed
 17 invention were different from the prior art, including the Darringer, et al. patent, because they
 18 excluded register-transfer level descriptions (*See e.g.*, Exhibit 4, April 1989 Amendment at 9).

19 A very clear distinction between Darringer and the present invention is
 20 that the input to the Darringer system is in the form of a register
 21 transfer level flowchart control language. Darringer et al., U.S. Patent
 22 No. 4,703,435, column 4, lines 26-32. ...In contrast, the application
 23 specific circuit designer utilizing the present invention need not possess
 any expertise common among highly skilled VLSI design engineers
 since input to the present invention is in the form of an architecture
 independent functional specification.

24 The file history, therefore, unmistakably demonstrates that “architecture independent” excludes
 25 register-transfer level descriptions and that anything including register-transfer level descriptions
 26 cannot be encompassed by the claimed invention. Thus, although claims 13-17 are invalid because of
 27 the addition of the vague and imprecise phrase “architecture independent” to them, the file history
 28 unambiguously and unmistakably demonstrates that adding that phrase and the corresponding

1 arguments in the file history excluded input specifications with a register-transfer level description
2 from the scope of the claimed invention. *See Springs Window Fashions*, 323 F3d at 995-96
3 (patentee’s distinguishing a cited prior art patent, limited claim scope to exclude devices like those
4 described in the cited patent). This is again consistent with the inventor’s own contemporaneous
5 article, which provides that the input of his invention “is not an RT-level description.” (Exhibit 2 at
6 388).

7 The file history and the Darringer et al. prior art also explain that register-transfer level
8 descriptions are descriptions that define any control needed for the ASIC at the clock cycle level,
9 which consists of: 1) defining the inputs, outputs, and any registers of the proposed ASIC; and, 2)
10 describing for a single clock cycle of the ASIC how the ASIC outputs and any registers are set
11 according to the values of the ASIC inputs and the previous values of the registers. (Exhibit 5 at
12 5:27-35); *See Kumar*, 351 F.3d at 1368 (adopting definition of term in cited prior art which is
13 intrinsic evidence).

14 Ricoh proposes a definition for “architecture independent actions and conditions” that would
15 include any “functional or behavioral aspects of a circuit (or circuit segment) that does not imply any
16 set architecture, structure, or implementing technology.” Ricoh’s definition improperly ignores the
17 fact that the phrase “architecture independent” was not in the original application and was added
18 along with repeated arguments that adding the phrase “architecture independent” limited the
19 functional specifications (comprised of a series of actions and conditions) by excluding register-
20 transfer level descriptions that were included in the prior art functional specifications.

21 First, Ricoh attempts to mask the fact that its definition of “architecture independent” was
22 formed through the improper use of a general-usage dictionary’s definitions for the terms
23 “architecture” and “independent” by taking issue with Synopsys’ and Defendants’ defining
24 “architecture independent” and “actions and conditions” separately. Synopsys’ and Defendants’
25 definition, which takes into account the affect of adding the completely new phrase “architecture
26 independent” to the claims and the specification in light of the ‘432 patent’s file history is certainly
27 proper and mandated by Federal Circuit authority. In contrast, Ricoh’s attempt to define the technical
28 phrase “architecture independent” with a general-usage dictionary is improper and should be rejected.

1 See *Vanderlande*, 366 F.3d at 1321 (where one of skill in the art would attach no meaning at all to
2 claim term general-usage dictionaries are irrelevant).

3 Second, Ricoh incorrectly claims that its definition “can be ascertained from the ‘432 patent.”
4 To support this conclusion, Ricoh relies on FIG. 1a and the following portions of the specification,
5 which were also amended to include the phrase “architecture independent.” (Exhibit 1 at 2:6-14;
6 3:50-57)(underlined portions show specification’s amendment):

7 In accordance with the present invention a CAD...system and method
8 is provided which enables a user to define the functional requirements
9 for a desired target integrated circuit, using an easily understood
functional architectural independent level representation....

* * *

10 FIG. 1a shows a functional (or behavioral) architectural independent
11 representation in the form of a flowchart. A flowchart is a graphic
12 representation of an algorithm and consists of two kinds of blocks or
states, namely actions and conditions (decisions). Actions are
conventionally represented in the flowchart by a rectangle or box and
conditions are represented by a diamond.

13 These portions of the ‘432 patent support Synopsys’ and Defendants’ proposal for “actions and
14 conditions,” *i.e.*, “the logical steps and decisions that are represented as rectangles and diamonds in
15 the flowchart.” Because the specification and the claims were both amended to add the phrase
16 “architecture independent,” these portions of the patent do not provide any guidance on the difference
17 between “architecture independent actions and conditions” of the amended ‘432 patent application
18 and the “actions and conditions” of the original ‘432 patent application. Thus, Ricoh’s definition of
19 the technical phrase “architecture independent,” which is improperly formed from the general-usage
20 dictionary definitions of the words “architecture” and “independent,” should be rejected.

21 Next, Ricoh takes issue with Synopsys’ and Defendants’ claim that the addition of the phrase
22 “architecture independent” along with the repeated arguments made in the file history demonstrates
23 that register-transfer level descriptions were disclaimed from the scope of the claimed invention.
24 Specifically, Ricoh misleadingly claims that Synopsys’ and Defendants’ claim construction proposal,
25 which gives effect to the unmistakable disclaimer of subject matter in the file history, is an improper
26 non-infringement argument. Ricoh is wrong. Synopsys’ and Defendants’ proposal properly relies on
27 the indisputable public record to show that Ricoh disclaimed the “register-transfer” level descriptions
28 described in the Darringer prior art from the scope of its claimed invention. See *e.g.*, *Southwall*

1 *Techs.*, 54 F.3d at 1576 (“sputter-deposited dielectric” limited to one-step process by patentee’s
2 argument that dielectric was “directly deposited”).

3 In fact, it is Ricoh that makes infringement arguments in its opening brief. Specifically,
4 Ricoh, recognizing that its repeated arguments to the patent office disclaimed functional
5 specifications that included register-transfer level descriptions from the scope of the claimed
6 invention, argues now that the Court should “clarify” that only “basic” or “primitive RTL” was
7 disclaimed from the scope of the claimed invention and not “functional RTL.” Not surprisingly,
8 Ricoh then characterizes the Verilog and VHDL hardware description languages (“HDLs”) it accuses
9 of infringement as examples of “functional” register-transfer level languages. This directly
10 contradicts the ‘432 patent’s file history where Ricoh repeatedly distinguished the prior art HDLs,
11 which Ricoh claimed required the VLSI design expertise that is not required for using the method of
12 the claimed invention. (Exhibit 4, April 1989 Amendment at 9, 11, 13, 15 and 17; *see e.g.*, Exhibit
13 12 at 3, 7; Exhibit 13 at 73-74). Ricoh’s made up distinction is not only contrary to the file history
14 but it also finds no support in the other parts of the ‘432 patent’s public record (*i.e.*, the ‘432 patent,
15 its file history, and the cited prior art) or anywhere else.

16 Not only does the ‘432 patent’s public record fail to provide any support for Ricoh’s conjured
17 up distinction between “basic” or “primitive RTL” and “functional RTL” but ‘432 patent’s public
18 record never mentions the terms “basic RTL,” “primitive RTL,” or “functional RTL.” Ricoh
19 attempts to support its distinction by mischaracterizing the Darringer prior art patent. Specifically,
20 Ricoh claims that the Darringer prior art patent describes a “‘basic’ or ‘primitive Boolean’-type” of
21 register-transfer level description simply because the register transfer-level description can be
22 translated into AND/OR (*i.e.*, Boolean) logic. Ricoh’s argument is flawed.

23 The Darringer prior art patent specifically defines a register-transfer level description and the
24 subsequent translation or transformation steps described in that patent do not alter this explicit
25 definition. (Exhibit 5, 5:27-35):

26 [T]he process of this invention begins with . . . a **register-transfer**
27 **level description** . . . [which] **consists of two parts**: a specification of
the inputs, outputs, and latches of the chip to be synthesized; and a
28 flowchart-like **specification of control**, describing for a single **clock**
cycle of the machine how the chip outputs and latches are set according
to the values of the chip inputs and previous values of the latches.

1 Given this and the fact that the '432 patent file history explicitly disclaims all register-transfer level
 2 descriptions without a single reference to any so-called "basic," "primitive," or "functional" "types"
 3 of RTL, Ricoh's completely unsupported attempt to limit the unmistakable disclaimer of register-
 4 transfer level descriptions should be rejected out-of-hand.

5 Last, Ricoh again mischaracterizes the '432 patent's description in yet another attempt to
 6 claim that Synopsys' and Defendants' proposed construction excludes a preferred embodiment.
 7 Specifically, Ricoh claims that the example functional specification shown in FIG. 10 mandates a
 8 narrowing of the prosecution history disclaimer. FIG. 10 represents merely a sequence of actions and
 9 conditions with specified macros but without any register-transfer level description. Ricoh does not
 10 point to anything in FIG. 10 that it even claims constitutes a description for a single clock cycle or
 11 that meets any other part of the Darringer patent's definition of a register-transfer description.
 12 Besides its failure to support this claim, even if an interpretation excluded an example described in
 13 the patent (which is not the case here), Ricoh's unmistakable disclaimer in the '432 patent's file
 14 history of any input functional specifications that include a register-transfer level description warrants
 15 excluding even a preferred embodiment. *See Springs Window Fashions*, 323 F.3d at 996; *Rheox*, 276
 16 F.3d at 1327 (disclaimer in file history is highly persuasive evidence warranting exclusion of
 17 preferred embodiment).

18 The Court should reject Ricoh's proposed construction and instead adopt Synopsys' and
 19 Defendants' proposal.

20 21 3. The Proper Construction of "Data Describing A Set Of...Hardware 22 Cells..."

23 This claim limitation "storing data describing a set of available integrated circuit hardware
 24 cells for performing the actions and conditions defined in the stored set" should be construed
 25 consistently and as provided in portions F and G in Synopsys' column of the Joint Claim
 26 Construction Chart. Specifically, this claim limitation limits the claimed invention of claims 13-17
 27 by requiring that: 1) there be at least one hardware cell for each stored definition; and, 2) each named
 28

1 hardware cell has corresponding descriptions at the functional level, logic level, circuit level, and
 2 layout level that are all defined.

3 a. **There Must Be At Least One Hardware Cell For Each Stored**
 4 **Definition**

5 Claim 13 and the '432 patent specification requires that there be at least one hardware
 6 description for each of the stored definitions (macros in the macro library). (Exhibit 1 at FIG. 4;
 7 5:22-25) ("For each macro function in the macro library 23 there may be several hardware cells in the
 8 cell library 34 . . . "). Because it is necessary to match a hardware cell description for each stored
 9 definition specified in the flowchart, there must be at least one hardware cell description for each
 10 stored definition that can be specified. (Exhibit 1 at 8:31-33) ("To design a VLSI system from a
 11 flowchart description of a user application, it is necessary to match the functions in the flowchart with
 12 cells from a cell library."). Thus, the ability to design ASICs depends on the fact that there is at least
 13 one hardware description for each of the stored definitions. (*Id.*)

14 Not only is this requirement supported by the '432 patent but the claimed method for claims
 15 13-17 would be inoperative if there were not at least one corresponding hardware cell description to
 16 match to the stored definitions that have been specified in the flowchart. Therefore, there must be at
 17 least one hardware description for each of the stored definitions that can be specified in the flowchart.
 18 Otherwise, accepting Ricoh's position, the method would not be able to generate a netlist if one of the
 19 specified stored definitions was a stored definition without any corresponding hardware description
 20 to which it could be mapped. Despite this, Ricoh simply argues, without any explanation, that there
 21 is no support for this requirement. Thus, the Court should adopt Synopsys' and Defendants'
 22 proposal, which requires that there be at least one hardware description for each of the stored
 23 definitions that can be specified in the flowchart.

24 b. **Each Hardware Cell Description Must Define The Functional,**
 25 **Logic, Circuit, and Layout levels For That Hardware Cell**

26 Claim 13 and the '432 patent specification also require that each named hardware cell have
 27 corresponding descriptions at the functional level, logic level, circuit level, and layout level that are
 28 all defined. (Exhibit 1 at Fig. 4; 2:34-39; 3:59-67; 5:15-20; 5:23-25; 9:24-51). Specifically, the

specification defines the “data describing” the hardware cells as descriptions at the functional level, logic level, circuit level, and layout level. (Exhibit 1 at 9:24-34)(emphasis added):

Four types of information are stored for each cell. These are: (1) functional level information: description of the cell at the register transfer level; (2) logic level information: description in terms of the flip-flops and gates; (3) circuit level information: description at the transistor level; (4) Layout level information: geometrical mask level specification.

Additionally, such information is essential for matching the specified stored definitions to these hardware cell descriptions and for producing the netlist and mask data for the ASIC. (Exhibit 1 at 5:15-20; 8:60-64):

Rather than generating every required hardware cell from scratch, the system draws upon a cell library 34 of previously designed, tested and proven hardware cells of various types and of various functional capabilities with a given type.

* * *

If the cell library has a number of cells with different geometries for performing the operation specified by the macro, then an appropriate cell can be selected on the basis of factors such as cell function, process technology used, time delay, power consumption, etc.

Simply stated, without these functional, logic, circuit, and layout level definitions for each hardware cell, the ASIC could not be designed using the ‘432 patent’s claimed invention. (*Id.*).

While Ricoh disputes that each hardware cell description must have defined descriptions at the functional level, logic level, circuit level, and layout level, Ricoh, at the same time, admits that the hardware cells are defined to “have specific physical and functional characteristics used as building blocks for implementing an ASIC to be manufactured.” In order for the hardware cells to be defined by “specific physical and functional characteristics” of “previously designed hardware cells” as Ricoh admits is necessary, the “data describing” must have corresponding descriptions at the functional level, logic level, circuit level, and layout level that are all defined. Thus, Ricoh’s own proposal for the definition of hardware cells supports Synopsys’ and Defendants’ proposed construction.

The Court should reject Ricoh’s proposed construction and instead adopt Synopsys’ and Defendants’ proposal.

4. **The Claim Limitations Directed To Selecting Hardware Cells Using A Rule-Based Expert System**

The following two claim limitations are directed to the step of selecting hardware cells using a rule-based expert system for the claimed processes of claims 13-17 for the '432 patent:

1. storing in an expert system knowledge base a set of rules for selecting hardware cells to perform the actions and conditions;
2. selecting from said stored data for each of the specified definitions a corresponding integrated circuit hardware cell for performing the desired function of the application specific integrated circuit, said step of selecting a hardware cell comprising applying to the specified definition of the action or condition to be performed, a set of cell selection rules stored in said expert system knowledge base.

These two claim limitations should be construed consistently and as provided in portions H, I, J, N, and O in Synopsys' column of the Joint Claim Construction Chart. Specifically, these two claim limitations limit the claimed method of claims 13-17 by requiring that:

1. a rule-based expert system software maps each specified definition in the flowchart to a stored hardware cell description;
2. unlike conventional software, the rule-based expert system software uses an inference engine to selectively apply the rules stored in the knowledge base; and,
3. unlike conventional software, the rule-based expert system software uses a set of IF-THEN rules to map the specified definitions to the stored hardware cell descriptions.

Ricoh proposes constructions for the above two limitations without these three requirements. Ricoh does this in an attempt to alter the indisputable public record for the '432 patent and recapture claim scope that was relinquished to obtain allowance of claims 13-17. As demonstrated below, these three requirements are not only dictated by the public record for the '432 patent (*i.e.*, the claims, specification, and file history) but are also consistent with the ordinary meaning of the technical terms of art "expert system," "knowledge base," and "rules" as evidenced by contemporaneous technical dictionaries, texts, treatises, etc. from around the time the application for the '432 patent was filed.

a. **Rule-Based Expert System Maps Each Specified Definition In The Flowchart To A Stored Hardware Cell Description**

The language in claim 13 dictates that mapping the specified definitions to the stored hardware cell descriptions must be performed by a rule-based expert system and not conventional

1 software. (Exhibit 1 at 16: 42-44; 16:56-60) (“storing in an expert system knowledge base a set of
 2 rules for selecting hardware cells” and “said step of selecting a hardware cell comprising applying...a
 3 set of cell selection rules stored in said expert system knowledge base”). A person of ordinary skill in
 4 the art would understand this language as requiring the selecting step to be performed by a rule-based
 5 expert system. (Kowalski Decl. ¶ 56-57). To construe these limitations otherwise would constitute
 6 an improper redrafting of the claims that eliminates explicit requirements in the language used.

7 Besides being dictated by the claim language itself, the ‘432 patent’s specification also
 8 mandates that a rule-based expert system be used to select the hardware cells. (Exhibit 1 at Abstract;
 9 2:58-63; 8:29-37; 8:58-60). For example, on the first page of the ‘432 patent, the Abstract states that
 10 the present invention’s “method uses artificial intelligence and expert system technology...to select
 11 the...hardware cells.” (*Id.* at Abstract). Even more compelling are the statements in the ‘432
 12 patent’s description that the “mapping needs the use of artificial intelligence techniques because the
 13 cell selection process is complicated” and that the “Cell Selector uses a rule based expert system to
 14 select the appropriate cell or cells to perform each action.” (*Id.* at 8:58-60). Simply stated, the claim
 15 language and the ‘432 patent’s specification both require that mapping the specified definitions to the
 16 stored hardware cell descriptions be performed by a rule-based expert system.

17 Such a requirement is not only evident from the claims and the specification, but any
 18 reasonable competitor reviewing the ‘432 patent’s file history and the prior art distinguished in that
 19 file history would conclude that these two limitations require that a rule-based expert system software
 20 be used for mapping the specified definitions to the stored hardware cell descriptions. Specifically,
 21 this conclusion is inescapable for any person of skill in the art in view of the statements made
 22 regarding these limitations, the unambiguous arguments made when these limitation were added to
 23 claim 13 (original application claim numbers 20, 21, and 25)⁶, the examiner interview summary, and
 24 the prior art that was distinguished based on these limitations in the ‘432 patent’s file history.

25 _____
 26 ⁶ Claim 13 of the issued ‘432 patent corresponds to application claim 20. Application claim 20 was
 27 amended during the file history to add the requirement of using a rule-based expert system by adding
 28 the limitation of application claim 21 to the selecting step. At the same time, the additional
 generating step of application claim 25 of the original patent application was also added to
 application claim 20.

First, in the April 1989 Amendment in the '432 patent's file history, it was argued that using a rule-based expert system to select hardware cells distinguished the '432 patent's invention from the prior art. (Exhibit 4, April 1989 Amendment at 10) (emphasis added) ("Furthermore, although it is known in the art of automatic layout to utilize hardware cell libraries, a **rule based expert** system has not been utilized to accomplish a task of **selection of cells** from the cell library. This clearly distinguishes the present invention over Darringer et al."). In that same amendment, it was also argued that Darringer et al. did not teach the claimed method of application claim 21 because it "provides a knowledge base in the form of a **rule based** automatic logic synthesis component, *i.e.* an **expert system**." (*Id.* at 9) (emphasis added). This amendment demonstrates that mapping the specified definitions to the stored hardware cell descriptions must be performed by an expert system knowledge base (*i.e.*, a rule-based expert system) and not conventional algorithmic software that was known and disclosed in the prior art, including in Darringer et al.

Second, the summary of the October 1989 examiner interview and the November 1989 Amendment reveal that the limitations: 1) "storing in an expert system knowledge base a set of rules for selecting hardware cells to perform the actions and conditions;" and, 2) "said step of selecting a hardware cell comprising applying to the specified definition of the action or condition to be performed, a set of cell selection rules stored in said expert system knowledge base" were added to claim 13 (application claim 20) to claim the feature of an expert system for translating a flowchart to a netlist. That summary provides:

It is **agreed** that the **features** "flowchart editor" and "expert system for translating the flowchart into a netlist defining the necessary hardware cells of the integrated circuit" are patentable [*sic*] distinct from the reference identified above. Thus, applicant's attorney **will** amend the claims to include **those features**.

(Exhibit 4, Examiner Interview Summary) (emphasis added). In the November 1989 Amendment following this interview, claim 13 (application claim 20) was amended to add the step of "generating for the selected integrated circuit hardware cells, a netlist..." from application claim 25 and the requirement from application claim 21 that the prior selecting step be performed by "applying...a set of cell selection rules stored in said expert system knowledge base." The limitation "storing in an expert system knowledge base a set of rules for selecting hardware cells ..." was also added to claim

1 13 to provide the proper antecedent basis for the added phrase “cell selection rules stored in said
2 expert system knowledge base.” Thus, claim 13 was amended to distinguish over the Darringer et al.
3 prior art reference by requiring the mapping of the specified definitions in the flowchart to the stored
4 hardware cell descriptions to be performed by a rule-based expert system.

5 Ricoh claims that the term “expert system knowledge base” “is intended to capture the
6 features of a ‘knowledge base’ that may be used in an expert system, but not intended to capture an
7 “expert system” that uses a ‘knowledge base.’” Ricoh’s claim directly contradicts the ‘432 patent’s
8 public record. First, the April 1989 Amendment demonstrates that the addition of the language
9 “applying . . . a set of cell selection rules stored in said expert system knowledge base” to application
10 claim 20 (issued claim 13) from application claim 21 requires the use of a rule-based expert system
11 for the mapping of the specified definitions to the stored hardware cell descriptions. (Exhibit 4, April
12 1989 Amendment at 9-10). Second, when the limitation from application claim 21 was added to
13 application claim 20 (issued claim 13), in the November 1989 Amendment, applicant explicitly
14 provided that “Independent Claim 20 has also been amended to emphasize the expert system aspects
15 of applicants’ method.” (*Id.*, November 1989 Amendment at 9). Last, the ‘432 patent and its file
16 history, consistent with the extrinsic evidence, both demonstrate that the terms “expert system
17 knowledge base,” “knowledge based expert system,” “rule-based expert system,” and “knowledge
18 base” are all used synonymously to refer to an expert system having an inference engine and a
19 knowledge base containing the rules embodying the expert knowledge as distinguished from
20 conventional software programs. (Exhibit 1 at 2:53-64; 5:25-29; 8:58-60; Exhibit 4, April 1989
21 Amendment at 9; Kowalski Decl. ¶ 35; Exhibit 14 at 140).

22 Equally misguided is Ricoh’s attempt to broaden the requirement that “mapping the specified
23 definitions to the stored hardware cell descriptions must be performed by a rule-based expert system”
24 to its proposal, which is “selecting...a hardware cell for performing the desired function of the
25 desired ASIC through the application of the rules.” Ricoh’s proposal is contrary to the ‘432 patent’s
26 public record.

27 As demonstrated above, the language “applying . . . a set of cell selection rules stored in said
28 expert system knowledge base” requires that the mapping be done by a rule-based expert system as

1 defined more fully below. Ricoh's use of the phrase "through the application of the rules" attempts
 2 to eliminate the requirement from the file history that a rule-based expert system be used. Second,
 3 the language "selecting ...for each of the specified definitions a corresponding integrated circuit
 4 hardware cell" requires "mapping each of the specified definitions to a stored hardware cell
 5 description." This is evident from the claim language and the '432 patent's description. (Exhibit 1 at
 6 6:28-31; 6:53-54; 8:58-60; 9:21-23; 9:51-61). Ricoh's attempt to eliminate the requirement that
 7 "each specified definition" be mapped to "a corresponding hardware cell" is contrary to the '432
 8 patent's public record. For these reasons, Ricoh's attempt to broaden this "selecting step" contrary to
 9 the '432 patent's claims, specification, and its file history should be rejected.

10 **b. Unlike Conventional Software, Rule-Based Expert System**
 11 **Software Uses An Inference Engine To Selectively Apply The Rules**
 12 **Stored In The Knowledge Base**

13 This requirement deals with the critical and important distinction in the claims, the '432
 14 patent specification and its file history between two different approaches for selecting hardware cells:
 15 1) rule-based expert system software; and, 2) conventional algorithmic software. Specifically, the
 16 rule-based expert system software claimed in the patent for performing the mapping step must
 17 comprise an inference engine, a knowledge base, and a working memory, which enable the inference
 18 engine to selectively apply the rules stored in the knowledge base to what is stored in the working
 19 memory (as distinguished from conventional algorithmic software, which uses a predefined step-by-
 20 step procedure). A person of ordinary skill in the art in 1988 would have known that the rule-based
 21 expert system software approach is substantially different than using conventional algorithmic
 22 software. Indeed, this distinction is evident from the technical dictionaries, texts, and treatises
 23 existing at the time the application for the '432 patent was filed and confirmed by the inventor's own
 24 contemporaneous article.

25 An expert system is software that attempts to embody the knowledge of a human expert in a
 26 particular field and then use that knowledge to simulate the reasoning of such an expert to solve
 27 problems in that field. (Exhibit 15 at 9-10, Exhibit 14 at 86-87, Exhibit 16 at 136). This particular
 28 type of software operates nothing like conventional software, which uses a predefined step-by-step

1 procedure (or algorithm) for solving problems. (Exhibit 6 at 1:30-54, Exhibit 15 at 7-10; Exhibit 14
2 at 6). Instead, expert systems use non-procedural processing to solve problems—*i.e.*, they solve
3 problems through the application of the rules in the knowledge base. (Exhibit 15 at 7-10).

4 An expert system is comprised of (i) a knowledge base containing the rules, written in IF-
5 THEN format, which embody the expert knowledge in the particular field and (ii) an inference engine
6 for selectively applying those rules. (Exhibit 15 at 9-10, 74-75, and 99-110, Exhibit 17 at 10-15,
7 Exhibit 14 at 86-87, 140, and 223, Exhibit 18 at 8, Exhibit 19 at 11-12, and Exhibit 20 at 13-20). The
8 rules have an antecedent portion (IF) and a consequent portion (THEN). (Exhibit 15 at 74-75,
9 Exhibit 17 at 10-11, Exhibit 18 at 8, Exhibit 21 at 269, Exhibit 20 at 14-15; Exhibit 14 at 10, 53).
10 The inference engine uses search and pattern matching techniques to selectively apply the rules in the
11 knowledge base. (Exhibit 15 at 10, Exhibit 17 at 9-11). The application of these rules solves the
12 particular problem in the field—not any predefined step-by-step procedure (*i.e.*, algorithm) as in
13 conventional software.

14 Ignoring how persons of ordinary skill in the field of the invention understand expert systems
15 technology, Ricoh proposes constructions for these two limitations that seek to alter the public record
16 for the '432 patent by attempting to blur this critical distinction between rule-based expert system
17 software and conventional algorithmic software so that it can later argue that claims 13-17 encompass
18 the conventional algorithmic software that it unambiguously disclaimed to obtain these claims of the
19 '432 patent.

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1 First, as explained above, the language in claim 13 dictates that the mapping must be
2 performed by a rule-based expert system and not conventional software. (Exhibit 1 at 16: 42-44;
3 16:56-61) (“storing in an expert system knowledge base a set of rules for selecting hardware cells”
4 and “said step of selecting a hardware cell comprising applying...a set of cell selection rules stored in
5 said expert system knowledge base”). A person of skill in the art would understand this language to
6 require that the selecting step uses one approach, *i.e.*, an expert system inference engine to apply a set
7 of IF-THEN rules stored in the expert system knowledge base to the specified definitions stored in
8 the working memory of the expert system as opposed to using the other approach, *i.e.*, conventional
9 algorithmic software, which uses a predefined step-by-step procedure. (Kowalski Decl. ¶ 56-57).

10 The distinctions between these two different approaches is also consistent with the inventor’s
11 (Dr. Kobayashi’s) own 1989 article about the same KBSC system described in the ‘432 patent.
12 (Exhibit 2 at 351). That article confirms that to one skilled in the art at the time of the filing, there
13 were only two approaches and that the KBSC system was directed to using an inference engine to
14 apply the IF-THEN rules contained in the knowledge base of a rule-based expert system and not the
15 conventional algorithmic approach of the prior art. (*Id.* at 379-380 and 389).

16 The importance of the distinctions between the rule-based expert system approach and the
17 conventional algorithmic software approach is also evident from the ‘432 patent’s specification. For
18 example, the specification provides that “mapping needs the use of artificial intelligence techniques
19 because the cell selection process is complicated.” (Exhibit 1 at 8:34-37). This conveys to a person
20 of ordinary skill in the art that the invention is directed to the use of rule-based expert system
21 software and not conventional algorithmic software. (Kowalski Decl. ¶ 41, 44, 56-57). In fact,
22 nothing in the ‘432 patent’s specification even suggests to a person of skill in the art to use
23 conventional algorithmic software instead of rule-based expert system software to select hardware
24 cells.

25 Not only is the distinction between expert system and conventional software evident from the
26 claims and the specification, but any reasonable competitor reviewing the ‘432 patent’s file history
27 and the prior art distinguished in that file history would conclude that the expert system software and
28 conventional software are two distinct and substantially different approaches. (Exhibit 4, January

1 1988 rejection, April 1989 amendment, August 1989 rejection, November 1989 amendment).
 2 Specifically, this is evident from the prior art that the applicant distinguished during the '432 patent's
 3 file history. (Exhibit 4, April 1989 amendment at 9-10, 13, Interview Summary, and November 1989
 4 amendment at 7-8); (Exhibit 6, at 1:30-56) (Rule-based expert systems use inference methods for
 5 applying the rules that make up the knowledge in the field to solve a problem and therefore, "differ
 6 substantially from conventional computer programs which solve problems with pre-defined
 7 algorithms . . .").

8 The '432 patent's file history also defines the "expert system knowledge base" as a
 9 knowledge base containing the rules and an inference engine for applying those rules. (Exhibit 4,
 10 November 1989 Amendment at 2, 8) (emphasis added):

11 an expert system including a knowledge base containing rules for
 12 selecting hardware cells from said cell library and inference engine
 13 means for selecting appropriate hardware cells from said cell library in
 14 accordance with the rules of said knowledge base

* * *

15 Claim 5 has also been amended to clearly distinguish it over the cited
 16 prior art by more clearly defining the expert system aspects of
applicants' invention including the provision of a knowledge base
containing rules for selecting hardware cells, [and] inference
engine means for selecting appropriate hardware cells....

17 Given that the language "applying...a set of cell selection rules stored in said expert system
 18 knowledge base" was added to "emphasize the expert system aspects of applicants' method," the
 19 "expert system knowledge base" certainly requires "a knowledge base containing rules for selecting
 20 hardware cells" and an "inference engine" for selectively applying those rules "for selecting
 21 appropriate hardware cells." (*Id.* at 2-3, 8-9). Thus, Ricoh's claim, in its brief, that nothing mandates
 22 that the "expert system knowledge base" have an "inference engine" not only ignores how persons in
 23 the field of the invention (including the '432 patent's inventor) would understand that term, but it is
 24 also contrary to the '432 patent's public record.

25 c. **Unlike Conventional Software, The Rule-Based Expert System**
 26 **Software Uses A Set Of IF-THEN Rules For Mapping Specified**
 27 **Definitions To Stored Hardware Cell Descriptions**
 28

(1) **IF-THEN Type Rules Are Required**

The '432 patent unmistakably defines the "rules" used by the rule-based expert system of the claimed invention to be IF-THEN rules. (Exhibit 1 at 11:1-15) (*see also* 11:48-12:30):

The rule format to be used is as follows:		
Rule	<number>	<context>
If {	<if-clause>	
}		
Then {	<then-clause>	
}		
where	<number>	rule number
	<context>	context in which this rule is active
	<if-clause>	the condition part of the rule
	<then-clause>	the action part of the rule

This definition is consistent with the understanding of one of skill in the art as demonstrated by the relevant technical dictionaries, treatises, and the prior art. (Exhibit 15 at 74-75, Exhibit 17 at 10-11, Exhibit 14 at 10, 53, Exhibit 18 at 8, Exhibit 21 at 269, Exhibit 20 at 14-15).

The fact that the claimed invention of the '432 patent requires the use of "IF-THEN rules" is also demonstrated by the inventor's own contemporaneous article. (Exhibit 2). That article described the same KBSC software described in the '432 patent and unequivocally asserts that IF-THEN rules were used by the KBSC software. (*Id* at 379, 381.). Thus, contrary to Ricoh's claims in its opening brief, persons of skill in the art (including the '432 patent's inventor) would understand the public record for the '432 patent to require that each rule have "an antecedent portion (IF) and a consequent portion (THEN)."

Aside from the fact that Ricoh's criticisms of Synopsys' and Defendants' proposal are unfounded, Ricoh improperly relies on a general-usage dictionary for its own definition of "rule" a technical term of art. Specifically, despite admitting that the "IF-THEN" rules are the only ones supported by the '432 patent's description, Ricoh, relying on a general-usage dictionary, proposes that these "rules" need only be "formulated as prescribed procedures." Ricoh's attempt to alter the definition of the technical term of art "rules" as understood by persons of skill in the art from the '432 patent to a definition from a general-usage dictionary is contrary to claim construction law. *See e.g., Vanderlande*, 366 F.3d at 1321. Thus, the Court must define the "rules" to require both "an

1 antecedent portion (IF) and a consequent portion (THEN)” and Ricoh’s attempt to broaden the ‘432
2 patent’s disclosure to encompass “prescribed procedures” should be rejected.

3 (2) **The Set Of IF-THEN Rules Embody The Expert Knowledge**
4 **For Mapping Specified Definitions To Stored Hardware Cell Descriptions**

5 The claim language “a set of rules for selecting hardware cells” and “said step of selecting a
6 hardware cell comprising applying to the specified definition of the action or condition to be
7 performed, a set of cell selection rules stored in said expert system knowledge base” requires that the
8 IF-THEN rules stored in the knowledge base of the rule-based expert system embody the expert
9 knowledge for mapping the specified definitions in the flowchart to the hardware cell descriptions.
10 (Exhibit 1 at 14:48-54). This is also demonstrated by the other claims in the ‘432 patent. (Exhibit 1 at
11 14:57-59; 15:56-58; 18:6-8) (“selecting appropriate hardware cells...in accordance with the rules of
12 said knowledge base”) (“applying rules of said knowledge base to the specified macros to select . . .
13 the hardware cells required . . .”).

14 Aside from being dictated by the language in the claim 13 and the other claims, the ‘432
15 patent’s specification also unmistakably requires that the IF-THEN rules stored in the knowledge
16 base of the rule-based expert system embody the expert knowledge for mapping the specified
17 definitions in the flowchart to the hardware cell descriptions. (Exhibit 1 at 8:58-9:5):

18 The Cell Selector 32 uses a rule based expert system to select the appropriate cell or cells to
19 perform each action. ...The knowledge base of cell selector 32 contains information (rules)
20 relating to...mapping macros to cells.... The above information is stored in the knowledge
base 35 as rules.

21 The “cell selection rules” referred to in this selecting step are the IF-THEN rules for “mapping
22 macros to cells.” (*Id.*). Thus, the “set of cell selection rules” are the set of IF-THEN rules of the
23 rule-based expert system that embody the expert knowledge that is essential for mapping the
24 specified definitions in the flowchart to the hardware cell descriptions.

25 Ricoh attempts to eliminate this claim requirement by proposing that the “rules” only
26 “comprise the expert knowledge of highly skilled VLSI designers.” The claim language and the ‘432
27 patent’s description, however, requires that the rules not only embody the expert knowledge of highly
28

1 skilled VLSI designers but that the “expert knowledge” be for mapping the specified definitions in
 2 the flowchart to the hardware cell descriptions. (Exhibit 1 at 8:21-23; 8:34-37).

3 Last, Ricoh’s definition “the expert knowledge of highly skilled VLSI designers formulated as
 4 prescribed procedures” must be rejected because it would encompass the Darringer prior art patent,
 5 which was distinguished in arguments in the file history. (Exhibit 4 at April 1989 Amendment at 9-
 6 10). Specifically, the Darringer prior art patent contains “the expert knowledge of highly skilled
 7 VLSI designers formulated as prescribed procedures” in the form of the transformations. (Exhibit 5
 8 at 7:32-9:35; Kowalski Decl. at ¶ 40). Thus, contrary to Ricoh’s proposal, “the set of rules” cannot
 9 be properly defined to encompass transformations in the the Darringer prior art patent because Ricoh
 10 disclaimed such procedures by claiming that Darringer had no knowledge base of any kind. *See e.g.,*
 11 *Southwall*, 54 F.3d at 1576 (The prosecution limits the interpretation of claim terms so as to exclude
 12 any interpretation that was disclaimed during prosecution).

13 5. The Proper Construction of “Generating For The Selected Integrated 14 Circuit Hardware Cells, A Netlist...”⁷

15 a. The “Generating” Step Is Separate From And Follows The 16 “Selecting” Step

17 The claim language “generating for the selected integrated hardware cells, a netlist” is
 18 unambiguous. That language demonstrates that “generating . . . a netlist” step is a separate step that
 19 must come after the step of “selecting” hardware cells. This is also evident from the ‘432 patent’s
 20 specification, which provides that the “netlist is generated after the cells have been selected . . . ”
 21 (Exhibit 1 at 9:64-65) (emphasis added).

22 Finally, the ‘432 patent’s file history reveals that the generating step (application claim 25) is
 23 a separate step that follows the selecting step that was added to claim 13 (application claim 20) in an
 24 amendment where the applicant could not create “new issues.” (Exhibit 4, November 1989
 25

26 ⁷ Like Ricoh’s attempt to add the phrase “During manufacture...” to the construction of “computer-
 27 aided design for designing,” Ricoh’s attempt to add the phrase “the netlist is passed to the next
 28 subsequent step in the process for manufacturing the desired ASIC” is both contrary to and not
 supported by the ‘432 patent’s public record as understood by one of skill in the art.

Amendment at 6). (“The amendments which have been made to these claims involve rewriting the claims to incorporate language previously set forth in dependent claims.”). That amendment incorporated the limitation from application claim 21 into claim 13 (application claim 20) and added the further generating step of application claim 25. (*Id.* at 4-5) The original claims 21 and 25 demonstrate that claim 21 limited the selecting step by adding a further limitation and claim 25 added the further generating step after that selecting step. (Exhibit 4, Original Application at 35-36) (emphasis added):

21. A process as defined in Claim 20 **wherein said step of selecting a hardware cell comprises** applying to the specified definition of the action and condition to be performed, a set of cell selection rules stored in a knowledge base.

25. A process as defined in Claim 20 **including the further step of generating for the selected integrated hardware cells** a netlist defining the hardware cells which are needed to perform the desired function of the integrated circuit and the interconnection requirements therefore.

The file history also reveals that the generating step is separate from and comes after the selecting step. For these reasons, Ricoh’s attempt to broaden the claimed invention by incorporating this step into the previous selecting step based solely on the additional “; and” before the selecting step should be rejected.

b. This Generating Step Requires Eliminating Unnecessary Hardware Cells That Have Been Selected

The claim language “generating **for the selected...hardware cells**, a netlist defining the **hardware cells which are needed** to perform the desired function of the integrated circuit” requires that this step eliminate any selected hardware cells that are not needed. In other words, this generating step “defines the needed hardware cells” by eliminating those hardware cells that have been selected but that are not necessary for the operation of the desired ASIC.

This requirement is also readily apparent from the ‘432 patent’s specification. Specifically, the ‘432 patent’s specification demonstrates that this generating step entails eliminating redundant and unnecessary selected hardware cells. (Exhibit 1 at 13:59-66). This is illustrated in FIGS 13, 14, and 15 for the ‘432 patent. (Exhibit 1 at 13:59-66):

FIG. 14 shows the results of optimizing the circuit by applying rule 4 to eliminate redundant registers. As a result of application of this rule, the registers R2, R3, R7, R8, and R9 in FIG. 13 were removed. FIG. 15 shows the block diagram after further optimization in which redundant comparators are consolidated. This optimization is achieved by PSCS program 30 by application of rule 5.

Given that there may be selected hardware cells that are redundant and/or unnecessary and the netlist defines only needed hardware cells, generating a netlist requires eliminating those unnecessary hardware cells.

Ricoh's opening brief appears to incorrectly claim that this elimination of redundant and unnecessary hardware cells is performed by the selecting step, which in pertinent part provides: "selecting...for each of the specified definitions a corresponding integrated circuit hardware cell for performing the desired function of the application specific integrated circuit, said step of selecting a hardware cell comprising applying to the specified definition of the action or condition to be performed, a set of cell selection rules stored in said expert system knowledge base." Ricoh's argument that these example rules for eliminating redundant and unnecessary hardware cells are encompassed by this selecting step is contrary to the explicit language in this step. Specifically, the "cell selection rules" are "applied" to "each of the specified definitions" and this is done "for selecting a hardware cell" "corresponding" to each of the "specified of the action or condition to be performed." As demonstrated above, this "selecting step" should be interpreted as set forth in N and O of Defendants and Synopsys portion of the Joint Claim Construction Statement.

c. **The Interconnection Requirements To Be Generated For The
Netlist Are The Control And Data Paths**

The '432 patent's specification defines the "interconnection requirements" for the necessary hardware cells defined in the netlist as the data and control paths. (Exhibit 1 at Abstract; 5:30-35):

From the flowchart, the system and method uses artificial intelligence and expert system technology to generate a system controller, to select the necessary integrated circuit hardware cells needed to achieve the functional specifications, and to generate the data and control paths for the operation of the of the integrated circuit. This list of hardware cells and their interconnection requirements is set forth in a netlist.

* * *

[T]he cells selected by the cell selector 32, the controller information generated by the controller generator 33 and the data and control paths generated by the data/control path

synthesizer 31 are all utilized by the PSCS program 30 to generate the netlist 15. The netlist is a list which identifies each block in the circuit and the interconnections between the respective inputs and outputs of each block.

These portions of the specification reveal that the control and data paths are the “interconnection requirements” that must be generated for the netlist. (*Id.*; *See also*, Exhibit 1 at FIG. 6; 6:47-54; 13:55-58). Ricoh’s claim that the “interconnection requirements” are not the control and data paths but are instead the “necessary parameters for connecting the respective inputs and outputs of each hardware cell” ignores the ‘432 patent’s description and therefore, should be rejected.

d. **A System Controller Must Be Generated For The Netlist**

The claim language “a netlist defining the hardware cells which are needed” for the ASIC to be designed and the ‘432 patent specification unmistakably defines a netlist to include all of the necessary hardware cells and a controller type hardware cell is one of those necessary hardware cells. (Exhibit 1 at 4:39-43; 13:67-14:3):

The netlist 15 includes a custom generated system controller, all other hardware cells required to implement the necessary operations, and interconnection information for connecting the hardware cells and the system controller.

* * *

Having now defined the system controller block, the other necessary hardware blocks and the data and control paths for the integrated circuit, the PSCS program 30 now generates a netlist 15 defining these hardware components and their interconnection requirements.

Moreover, the Field and Background of the Invention section of the specification also demonstrates that for the netlists in the field of the invention that in addition to defining the hardware components for the ASICs desired function and their interconnection requirements a “system controller must also be designed for synchronizing the operations of these components.” (*Id.* at 1:26-28).

Besides the fact that both the claim language and the specification reveal that a netlist requires a controller for controlling the other necessary hardware cells, the requirement that a controller be generated is also supported by the ‘432 patent’s file history. Specifically, the file history limits the input specification by excluding the register-transfer level description that would define the control for the hardware cells of the ASIC. (Exhibit 4, April 1989 Amendment at 9, November 1989 amendment at 7). Because no control is defined by the claimed invention’s input, a controller must

But while layout design information such as mask data is required for producing ASICs, it is certainly not used to directly manufacture ASICs as Ricoh claims. (*Id.* at ¶ 7-10). Because Ricoh seeks to manufacture a 35 U.S.C. § 271(g) infringement claim where none exists, Ricoh attempts to blur the distinction between “manufacturing” and “designing” by redrafting the claim language to include the phrase “which can be directly used by a chip foundry in the fabrication of the ASIC.” This phrase, however, is contrary to how one of skill in the art would understand “mask data” and also finds no support in the ‘432 patent or its file history. Thus, Ricoh’s thinly-veiled attempt to redraft this claim under the guise of interpretation should be rejected and the court should adopt Synopsys’ and Defendants’ proposed construction for claim 14.

7. The Proper Construction Of Dependent Claims 15-17

First, for claims 15 and 17, Ricoh again proposes a definition that seeks to obfuscate the distinction between “manufacturing” and “designing.” Specifically, Ricoh’s proposed interpretation for these two claims includes the phrase “producing signal lines for carrying.” (Kowalski Decl. at ¶ 68 and 72). This phrase finds no support in the ‘432 patent or its file history. (Exhibit 1, Exhibit 4). It is also contrary to how one of ordinary skill in the art would interpret claims 15 and 17 because a person of skill in the art would interpret the control and data paths as the interconnection requirements for the hardware cells at the structural level. (Kowalski Decl. at ¶¶ 63-64, 67-68, 71-72; Exhibit 1 at Abstract, Figs. 6 & 13-15, 1:17-37; 2:39-44; 3:23-25; 3:40-45; 4:39-43; 5:8-12; 5:30-40; 13:55-14:3). Ricoh claims that the control and data paths are “signal lines” as opposed to “structural descriptions” as proposed by Synopsys and Defendants. Ricoh is wrong. Ricoh supports this claim by relying on only a portion of the description in the ‘432 patent relating to FIG. 1b. (Exhibit 1 at 3:59-65) (emphasis added):

FIG. 1b illustrates a structural (or logic) level representation of an integrated circuit. In this representation, blocks are used to represent integrated architecture specific circuit hardware components for performing various functions, and the lines interconnecting the blocks represent paths for the flow of data or control signals between the blocks.

The *entire* portion of this section of the ‘432 patent, however, actually supports Synopsys’ and Defendants’ position that these control and data paths are “structural descriptions” as opposed to

1 actual "signal lines." (*Id.*; *see also* 3:4-5). Thus, the court should adopt Synopsys' and Defendants'
2 proposed construction for claims 15 and 17.

3 Second, claim 16 requires using a rule-based expert system software including an inference
4 engine for selectively applying the set of IF-THEN rules stored in the knowledge base for generating
5 the data paths for the selected hardware cells. (Kowalski Decl. at ¶ 69-70). Similar to the selecting
6 step of claim 13, Ricoh proposes an interpretation for this claim that seeks to eliminate the substantial
7 differences between rule-based expert system software and the conventional software programs in the
8 prior art it distinguished. This is contrary to the '432 patent and its file history as well as how one of
9 ordinary skill in the art would interpret this claim. (Exhibit 1 at Abstract, 5:8-12; 13:55-14:3; Exhibit
10 4, November 1989 Amendment at 7 and 9, Kowalski Decl. at ¶ 69-70). Thus, the court should adopt
11 Synopsys' and Defendants' proposed construction for claim 16.

12 VI. CONCLUSION

13 For all of the foregoing reasons and the intrinsic and extrinsic evidence identified in
14 Synopsys' and Defendants' portion of the Joint Claim Construction Statement filed on July 16, 2004,
15 the Court should adopt Synopsys' and Defendants' claim constructions for the '432 patent as set forth
16 in their proposed order filed with this brief.

17 Dated: September 10, 2004

Respectfully submitted,

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9 UNITED STATES DISTRICT COURT
10 NORTHERN DISTRICT OF CALIFORNIA
11 SAN FRANCISCO DIVISION
12

13 RICOH COMPANY, LTD.,)

14 Plaintiff,)

15 vs.)

16 AEROFLEX INCORPORATED, et al.,)

17 Defendants.)

18 SYNOPSYS, INC.,)

19 Plaintiff,)

20 vs.)

21 RICOH COMPANY, LTD., a Japanese)
22 corporation)

23 Defendant.)
24
25
26
27
28

Case No. C03-04669 MJJ (EMC)

Case No. C03-2289 MJJ (EMC)

**[PROPOSED] ORDER RE CLAIM
CONSTRUCTION OF CLAIMS 13-17 OF
UNITED STATES PATENT NO. 4,922,432**

Date: October 29, 2004

Time: 9:30 AM

Courtroom: 11

Judge: Martin J. Jenkins

The parties have asked the Court to construe the disputed terms, phrases, and clauses in claims 13-17 of United States Patent No. 4,922,432 (the '432 patent'). On October 29, 2004, the Court held a hearing in accordance with *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996), to construe the disputed terms, phrases, and clauses of the asserted claims. After consideration of the papers filed in support of each of the parties' claim construction, and having heard oral argument of counsel at the hearing, the Court construes the claims as follows:

Claim Language	[Proposed] Definitions For Disputed Claim Terms, Phrases, And Clauses	[Proposed] Construction Of Limitation Incorporating Definitions
13. A computer-aided design process for designing an application specific integrated circuit which will perform a desired function comprising	<p>A. "A computer-aided design process for designing" -- a process that uses a computer for designing, as distinguished from a computer-aided manufacturing process, which uses a computer to direct and control the manufacturing process.</p> <p>B. "application specific integrated circuit" -- an interconnected miniaturized electronic circuit on a single piece of semiconductor material designed to perform a specific function, as distinguished from standard, general purpose integrated circuits, such as microprocessors, memory chips, etc.</p>	A process that uses a computer for designing (as distinguished from a computer-aided manufacturing process, which uses a computer to direct and control the manufacturing process) an interconnected miniaturized electronic circuit on a single piece of semiconductor material designed to perform a specific function as distinguished from standard, general purpose integrated circuits, such as microprocessors, memory chips, etc.
storing a set of definitions of architecture independent actions and conditions;	<p>C. "actions and conditions"-- are the logical steps and decisions that are represented as rectangles and diamonds in the flowchart; collectively logical operations.</p> <p>D. "architecture independent" -- not including (i.e., excluding) a register transfer level (RTL) description or any other description that is hardware architecture dependent. An RTL description consists of: 1) defining the inputs, outputs, and any registers of the proposed ASIC; and, 2) describing for a single clock cycle of the ASIC how the ASIC outputs and any registers are set</p>	<p>storing a set of named descriptions defining the functionality and arguments for the available logical steps and decisions that may be specified in the flowchart where register-transfer level (RTL) descriptions are excluded.</p> <p>An RTL description defines any control needed for the ASIC and consists of: 1) defining the inputs, outputs, and any registers of the proposed ASIC; and, 2) describing for a single clock cycle of the ASIC how the ASIC outputs and any registers are set according to the values of the ASIC inputs and the</p>

Claim Language	[Proposed] Definitions For Disputed Claim Terms, Phrases, And Clauses	[Proposed] Construction Of Limitation Incorporating Definitions
	<p>according to the values of the ASIC inputs and the previous values of the registers; an RTL description defines any control needed for the ASIC.</p> <p>E. "a set of definitions of architecture independent actions and conditions" -- a set of named descriptions defining the functionality and arguments for the available logical steps and decisions that may be specified in the flowchart; and excluding a register transfer level description.</p>	<p>previous values of the registers.</p>
<p>storing data describing a set of available integrated circuit hardware cells for performing the actions and conditions defined in the stored set;</p>	<p>F. "hardware cells" -- logic blocks for which the functional level (e.g., register transfer level), logic level (e.g., flip flop and gate level), circuit level (e.g., transistor level), and layout level (e.g., geometrical mask level) descriptions are all defined.</p> <p>G. "data describing a set of available integrated circuit hardware cells for performing the actions and conditions defined in the stored set" -- a set of named integrated circuit hardware cells that includes at least one hardware cell for each stored definition that may be specified for the available logical steps and decisions; where each named hardware cell has corresponding descriptions at the functional level (e.g., register transfer level), logic level (e.g., flip-flop and gate level), circuit level (e.g., transistor level), and layout level (e.g., geometrical mask level) that are all defined.</p>	<p>storing a set of named integrated circuit hardware cells that includes at least one hardware cell for each stored definition that may be specified for the available logical steps and decisions; where each named hardware cell has corresponding descriptions at the functional level (e.g., register transfer level), logic level (e.g., flip-flop and gate level), circuit level (e.g., transistor level), and layout level (e.g., geometrical mask level) that are all defined;</p>

Claim Language	[Proposed] Definitions For Disputed Claim Terms, Phrases, And Clauses	[Proposed] Construction Of Limitation Incorporating Definitions
<p>storing in an expert system knowledge base a set of rules for selecting hardware cells to perform the actions and conditions;</p>	<p>H. "expert system" -- software executing on a computer system that attempts to embody the knowledge of a human expert in a particular field and then uses that knowledge to simulate the reasoning of such an expert to solve problems in that field. This system is comprised of a knowledge base containing rules, working memory containing the problem description, and an inference engine. It solves problems through the selective application of the rules in the knowledge base to the problem description, as distinguished from conventional software, which uses a predefined step-by-step procedure (algorithm) to solve problems.</p> <p>I. "Knowledge base" -- the portion of the expert system containing a set of rules embodying the expert knowledge for the particular field.</p> <p>J. "a set of rules for selecting hardware cells to perform the actions and conditions" -- a set of rules, each having an antecedent portion (IF) and a consequent portion (THEN), embodying the knowledge of expert designers for application specific integrated circuits, which enables the expert system to map the specified stored definitions for each logical step and decision represented in the flowchart to a corresponding stored hardware cell description.</p>	<p>storing in the knowledge base portion of an expert system (software that solves problems through selective application of the rules in the knowledge base by an inference engine, as distinguished from conventional software, which uses a predefined step-by-step procedure (algorithm) to solve problems) a set of rules, each having an antecedent portion (IF) and a consequent portion (THEN), and embodying the knowledge of expert designers for application specific integrated circuits, which enables the expert system to map the specified stored definitions for each logical step and decision represented in the flowchart to a corresponding stored hardware cell description;</p>

Claim Language	[Proposed] Definitions For Disputed Claim Terms, Phrases, And Clauses	[Proposed] Construction Of Limitation Incorporating Definitions
describing for a proposed application specific integrated circuit a series of architecture independent actions and conditions;	K. “describing for a proposed application specific integrated circuit a series of architecture independent actions and conditions” -- the designer represents a sequence of logical steps (rectangles) and decisions (diamonds), and the transitions (lines with arrows) between them in a flowchart format for a proposed application specific integrated circuit.	the designer represents (for a proposed application specific integrated circuit) a sequence of logical steps (rectangles) and decisions (diamonds), and the transitions (lines with arrows) between them in a flowchart format that excludes any register-transfer level descriptions.
specifying for each described action and condition of the series one of said stored definitions which corresponds to the desired action or condition to be performed; and	<p>L. “specifying for each described action and condition of the series one of said stored definitions” -- the designer assigns one definition from the set of stored definitions for each of the described logical steps and decisions represented in the flowchart.</p> <p>M. “which corresponds to the desired action or condition to be performed” -- each specified definition must correspond to the intended step or decision to be performed.</p>	the designer assigns one definition from the set of stored definitions for each of the described logical steps and decisions represented in the flowchart; and each specified definition must correspond to the intended step or decision to be performed;

Claim Language	[Proposed] Definitions For Disputed Claim Terms, Phrases, And Clauses	[Proposed] Construction Of Limitation Incorporating Definitions
<p>selecting from said stored data for each of the specified definitions a corresponding integrated circuit hardware cell for performing the desired function of the application specific integrated circuit, said step of selecting a hardware cell comprising applying to the specified definition of the action or condition to be performed, a set of cell selection rules stored in said expert system knowledge base and</p>	<p>N. "selecting from said stored data for each of the specified definitions a corresponding integrated circuit hardware cell for performing the desired function of the application specific integrated circuit" -- mapping the specified stored definitions for each logical step and decision represented in the flowchart to a corresponding stored hardware cell description.</p> <p>O. "said step of selecting a hardware cell comprising applying to the specified definition of the action or condition to be performed, a set of cell selection rules stored in said expert system knowledge base" -- the mapping of the specified definitions to the stored hardware cell descriptions must be performed by an expert system having an inference engine for selectively applying a set of rules, each rule having an antecedent portion (IF) and a consequent portion (THEN), embodying the knowledge of expert designers for application specific integrated circuits, which enables the expert system to map the specified stored definitions for each logical step and decision represented in the flowchart to a corresponding stored hardware cell description.</p>	<p>mapping the specified stored definitions for each logical step and decision represented in the flowchart to a corresponding stored hardware cell description, where the mapping of the specified definitions to the stored hardware cell descriptions must be performed by an expert system having an inference engine for selectively applying a set of rules, each rule having an antecedent portion (IF) and a consequent portion (THEN), embodying the knowledge of expert designers for application specific integrated circuits, which enables the expert system to map the specified stored definitions for each logical step and decision represented in the flowchart to a corresponding stored hardware cell description;</p>

Claim Language	[Proposed] Definitions For Disputed Claim Terms, Phrases, And Clauses	[Proposed] Construction Of Limitation Incorporating Definitions
<p>generating for the selected integrated circuit hardware cells, a netlist defining the hardware cells which are needed to perform the desired function of the integrated circuit and the interconnection requirements therefor.</p>	<p>P. “netlist” -- a structural description that includes a custom controller type hardware cell and all other hardware cells required to implement the application specific integrated circuit’s operations and any necessary interconnections including the necessary control and data path information for connecting the hardware cells and the controller.</p> <p>Q. “generating for the selected integrated circuit hardware cells, a netlist defining the hardware cells which are needed to perform the desired function of the integrated circuit” -- producing a list of the needed hardware cells by eliminating any mapped hardware cells that are redundant or otherwise unnecessary and producing a custom controller type hardware cell for providing the needed control for those other hardware cells and</p> <p>R. “generating ...interconnection requirements therefor” -- producing the necessary structural control paths and data paths for the needed hardware cells and the custom controller.</p>	<p>producing a list of the needed hardware cells by eliminating any mapped hardware cells that are redundant or otherwise unnecessary, producing a custom controller type hardware cell for providing the needed control for those other hardware cells, and producing the necessary structural control paths and data paths for the needed hardware cells and the custom controller</p>
<p>14. A process as defined in claim 13, including generating from the netlist the mask data required to produce an integrated circuit having the desired function.</p>	<p>S. “generating from the netlist the mask data required to produce an integrated circuit having the desired function” -- producing, from the structural netlist, the detailed layout level geometrical information required for manufacturing the set of photomasks that are used by the processes that directly manufacture the application specific integrated circuit.</p>	<p>A process as defined in claim 13, including producing, from the structural netlist, the detailed layout level geometrical information required for manufacturing the set of photomasks that are used by the processes that directly manufacture the application specific integrated circuit</p>
<p>15. A process as defined in claim 13 including the</p>	<p>T. “generating data paths for the selected integrated circuit hardware cells” -- producing the necessary</p>	<p>A process as defined in claim 13 including the further step of producing the necessary structural</p>

Claim Language	[Proposed] Definitions For Disputed Claim Terms, Phrases, And Clauses	[Proposed] Construction Of Limitation Incorporating Definitions
further step of generating data paths for the selected integrated circuit hardware cells.	structural descriptions of the data paths for the mapped hardware cells.	descriptions of the data paths for the mapped hardware cells.
16. A process as defined in claim 15 wherein said step of generating data paths comprises applying to the selected cells a set of data path rules stored in a knowledge base and generating the data paths therefrom.	U. "said step of generating data paths comprises applying to the selected cells a set of data path rules stored in a knowledge base and generating the data paths therefrom" -- the generating step must be performed by at least an expert system having an inference engine for selectively applying a set of rules, each having an antecedent portion (IF) and a consequent portion (THEN), embodying the knowledge of expert designers for application specific integrated circuits, which enables the expert system to produce the necessary data paths for the mapped hardware cells.	A process as defined in claim 15 where the generating step must be performed by at least an expert system having an inference engine for selectively applying a set of rules, each having an antecedent portion (IF) and a consequent portion (THEN), embodying the knowledge of expert designers for application specific integrated circuits, which enables the expert system to produce the necessary data paths for the mapped hardware cells.
17. A process as defined in claim 16 including the further step of generating control paths for the selected integrated circuit hardware cells.	V. "generating control paths for the selected integrated circuit hardware cells" --producing the necessary structural descriptions of the control paths for the selected hardware cells.	A process as defined in claim 16 including the further step of producing the necessary structural descriptions of the control paths for the selected hardware cells.

Dated: _____

The Honorable Martin J. Jenkins
United States District Court Judge